

ART REEVES

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INTERNATIONAL PHOTOGRAPHER

HOLLYWOOD

TH YEAR

JANUARY, 1937

VOL. 8
No. 12

ART REEVES
MOTION PICTURE EQUIPMENT
7512 SANTA MONICA BLVD.
HOLLYWOOD, CALIF. U.S.A.



BY EARL CROWLEY

This beautiful shot is taken from one of the stills of the Hop-Along-Cassidy series in production by Harry Sherman Productions. Earl Crowley acted as still man and the director was Nate Watt. The regal figure mounted upon the white steed was William Boyd. The equine is an unnamed actor, but a wonder at his game.

CENTS
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MOTION PICTURE ARTS AND CRAFTS

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Yours sincerely,

GLENN ROBERT KERSHNER, Local 659.

INTERNATIONAL PHOTOGRAPHER

MOTION PICTURE ARTS AND CRAFTS

VOL. 8

HOLLYWOOD, JANUARY, 1937

No. 12

Publisher's Agent, HERBERT ALLER
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A Monthly Publication Dedicated to the Advancement of Cinematography in All
Its Branches; Professional and Amateur; Photography; Laboratory and Processing,
Film Editing, Sound Recording, Projection, Pictorialists.

CONTENTS

Front Cover by EARL CROWLEY

Frontispiece by GLEN KERSHNER

JUST A FEW NOTES ON CENSORSHIP - - - - -	3
<i>By Earl Theisen</i>	
WHAT THE PUBLIC WANTS TO KNOW ABOUT TELEVISION -	4
<i>By Harry R. Lubcke</i>	
PHOTOGRAPHY ON TWO WHEELS - - - - -	6
<i>By Karl A. Barleben, Jr., F.R.P.S.</i>	
MOTION PICTURE SOUND RECORDING, Chapter 29 - -	8 & 9
<i>By Charles Felstead, Associate Editor</i>	
CREATING LIGHT-EFFECTS IN TECHNICOLOR - - -	10
<i>By W. Howard Green</i>	
WHAT RESEARCH MEANS IN MAKING	
MOTION PICTURES - - - - -	12
<i>By Frances Cary Richardson</i>	
PROJECTION IN RELIEF—THIRD DIMENSION - - -	14
<i>By Department of Commerce, U. S. A.</i>	
AMATEUR MOTION PICTURE DEPARTMENT - -	18-19-20-21
That Prize-Winning Amateur Film	
<i>By F. Hamilton Riddell</i>	
Right Off the Reel	
<i>By F. Hamilton Riddell</i>	
A New Educational Film	
Cinema-Tidings	
EARLY STEPS IN THE HISTORY OF THE	
MOTION PICTURE INDUSTRY - - - - -	22
<i>By G. W. (Billy) Bitzer</i>	
THE CINEMATOGRAPHER'S BOOK OF TABLES - - -	24
<i>By Fred Westerberg</i>	
THE ASSISTANT DIRECTOR - - - - -	26
<i>By John Van Pelt, Actor</i>	
CLASSIFIED ADVERTISING - - - - -	30
HOLLYWOOD OFF STAGE - - - - -	32
<i>By Earl Theisen</i>	

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Printed in the U. S. A. at Hollywood, California



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Another Mile Stone

This is the end of Volume 8, of the INTERNATIONAL PHOTOGRAPHER, and it is with the keenest appreciation that the staff extends thanks to all those subscribers, advertisers, contributors, artists and well wishers who have lent their talents and goodwill in co-operation for the success of our magazine.

It is no picnic to build an international magazine like INTERNATIONAL PHOTOGRAPHER, yet it may be done by dint of constant labor, by close application to business affairs and by a never failing courtesy which is the hall-mark of ultimate success.

During the year 1937 INTERNATIONAL PHOTOGRAPHER will open new channels of service and interest and particularly that one which will have to do with the discovery and development of new equipment and better ways to do things.

Motion Picture Arts and Crafts has been an important part of the plans of the INTERNATIONAL PHOTOGRAPHER since the first copy of the first volume came off the press and this idea will be more greatly developed with each issue of the magazine.

There is much to write about but perhaps it is sufficient to set forth that all the members of our brilliant staff, who have in past years contributed so largely to our publication's interest and use value, will remain to add lustre to their past achievements.

As Dickens' Tiny Tim would say: "God bless us everyone," and that takes in the reader and everyone who is, or shall be, the friend of INTERNATIONAL PHOTOGRAPHER.

JUST A FEW NOTES ON CENSORSHIP

By EARL THEISEN, *Associate Editor*

The motion picture industry does not fear intelligent criticism, but it does fear meddling. Theoretically, the censors are trying to remove the disrespect of the law, the dramatization of crime and the appearance of the attractiveness of evil from the movie; actually, they are, too much of the time, dabbling with academic discussions of abstract issues. Their efforts are directed, no less, to such evils as whether a man should kiss standing up or sitting down, and whether such kisses should be of three or five seconds duration.

Limp verdicts as to whether the word "finger" should be used in films except in association with a wedding ceremony are passed. The nickname "Randy," short for Randolph, is prohibited because some outlanders use the word to describe a noisy revel. "Ran," however, is all right. One film was banned because it showed a dust cloud. And so forth.

Lo Kang, the chief film censor of China, wrote in May, 1931, "to define such things as love and romance and determine the point at which they become objectionable is a difficult task." He expressed the hope that Hollywood could help with the definition.

In August, 1934, a Nazi Board of Censorship rejected a script, "The Courage of Suzanne." The story was about a girl who wanted a film career very badly and a film executive who wanted to seduce her, also very badly, but the censor board found the subject unfit. "The Payoff," the story, was written by William Krause, Chief Nazi Film Censor, no less.

"Frankenstein" was banned in some foreign countries because it presumed to imply that others besides God could make a man.

Some of the demands advanced by local censors are a buffoonery at public intelligence, rather than a regulation of right and wrong. One director of a small town community board felt called on to write Will Hays demanding that he wage a crusade against the practice of seating men and women side by side in the theaters. She wrote: "The women should sit on one side and the men on the other, with a wide aisle between. The darkened interior of movie houses creates a spell for unguided persons, and too often things happen in the theater."

It is a lamented fact that one of the leading occupations is the grand old sport of minding the other fellow's business, and this, after stripping away the outer shell, is the basis of censorship. It is a determination of various individuals to make the desires and preferences of others conform to their own.

The censorship yardstick certainly varies and a thing that is considered beautiful in one locality is vulgar in another. One community board will permit while a few miles across the townsite another board will thumbs down.

Besides the local boards of which there are over 250 in the United States, the states having censorship are New York, Ohio, Virginia, Maryland, Pennsylvania and Kansas. Florida has a regulatory committee that works with the National Board of Review. Certain cities such as Chicago have a city group of film surgeons. Massachusetts has a Sunday censor.

The chief taboos of censorship are collusion in divorce, travesty of justice, undressing, feminine underclothing, religious ceremonies, flippant treatment of death, youthful depravity, offensive political propaganda, and human suffering.

The vagaries of the film surgeons and their phobias are without number. Their likes, dislikes and what they had for breakfast strongly flavor the decisions, if results may justify a conclusion. In December, 1932, Pasadena, the railroad station for Hollywood where the celebrity alight, banned the "Our Gang" comedies on the theory the films taught the children bad manners. Warner Brothers film "G-Man" was put back in the can in Chicago because it was too exciting for children. Such films as "Dr. Monica," "Side Streets," "The Devil Is a Woman," and so forth, were held up in Chicago for assorted reasons.

Also, in Chicago, in July, 1936, the local censor board refused to issue a permit on "I Was a Captive in Nazi Germany," the reason being, the Germans might object. At the same time the local Warner Brothers office scratched their collective heads trying to get around the inference of an illegitimate child in the film "Anthony Adverse," a movie generally rated as "artistic" by those who rate things. If the sequence about the child could not be made nice the board was going to thumbs down, or words to that effect. Mae West's film, "It Ain't No Sin," was limited to adults only by this board.

All is not serene within the censor ranks. They get into each others' long hair. In Portland the city council twice overruled the censor board when the movie snippers refused the showing of films. One such film was the R.K.O. film, "The Meanest Gal in Town."

Mayor Anton Cermak got irked at the censor board in Chicago for passing the Douglas Fairbanks

(Turn to Page 24)

What the Public Wants to Know About Television

By HARRY R. LUBCKE

DURING the early public demonstration of high definition television held by the Don Lee Broadcasting System a record of the questions asked by the public was maintained. Starting on June 4, 1936, daily four-hour demonstrations of three hundred line television were held on the main floor of the Don Lee Building in Los Angeles. Five thousand people saw the images broadcast by the Don Lee Station W6XAO as received on a practical home type cathode ray receiver. The questions follow in the order of their recurrence, with a sketch of the answers to them:

1. "I can see more or less how sound can be broadcast, but I can't imagine how you can send a **picture** over the air."

A. "Television," we said, "is accomplished by a process of tearing down the image at the transmitter, sending it out one line after the other through the television ether-waves, and



S. A. Mosley, author and television pioneer in England, right; and H. R. Lubcke, Director of Television of the Don Lee Broadcasting System, left; beside the Don Lee cathode ray television receiver installed in the home demonstration location.

recombining the successive lines into one complete picture at the receiver. This process must be repeated with lightning-like rapidity. Some of the impulses generated last only one mil-

lionth of a second. During each second 24 complete pictures are transmitted and received.

"The light rays of the scene at the transmitter are not sent to the receiver. The transmitting equipment converts the light into corresponding electrical impulses, then into television ether-waves. The latter are broadcast. These, being picked up at the receiver, are changed back into electrical impulses, and finally, to light rays, which display the received picture."

2. "What price are you asking for sets like this?"

A. We explained that we had nothing to sell.

3. "How much will sets like this sell for when they first come out?"

A. "About \$350, retail."

4. "How far away from the transmitter could we pick up this picture?"

A. "A maximum of 8 to 10 miles with no intervening obstacles. Freedom from interference and transmitting range is dependent upon the power of the transmitter, up to about 50 miles, beyond which the curvature of the earth limits reception. In the future, powerful transmitters will render good service within a range of 50 miles."

5. "Will it have to be real dark in our home for television reception?"

A. "Usual night darkness is satisfactory. Daylight reception with shades drawn in the usual home can be accomplished, but it is not pleasing, particularly if the sun strikes the windows."

6. "Will there be an attachment by which we can receive television on our present radio sets?"

A. No! Picture reception requires a band width 100 times as wide as the best radios. It is impossible to accommodate this width in any present or future radios.

7. "Will the picture be larger?"

A. "Yes. There are fifty of you seeing this picture. If you had it in your home with just a few viewers, you probably would not desire a larger picture. It is a matter of viewing distance. For instance, you do not insist that a postcard be enlarged to the size of a motion picture screen so that you can look at it, you merely look at it closer than you choose to be seated from the screen in a motion picture theatre."

8. "Is this country behind England and Germany in television advancement?"

A. "A detailed study would show you that these countries have not necessarily better television systems, but that their respective governments have recognized, licensed and popular-

ized television to a greater extent than the United States. It is merely a difference in policy."

9. "Will the sound be broadcast on the same frequency with the picture?"

A. "No. Without special means one would interfere with the other. The Federal Communications Commission, however, grants licenses for an experimental sound channel adjacent to the picture channel."

10. "Is it true that the movies have been holding television back?"

A. "Many people have asked this, but we have not encountered anything more tangible than rumors."

11. "Is television similar to 'telephoto,' and other facsimile system?"

A. "Yes. However, telephoto sends one image in 15 minutes; television twenty-four images each second. The increased speed makes television much more difficult."

12. "How does static affect television?"

A. "Static bursts appear as comet-like streaks of light dashing across the screen in a horizontal direction. Static is not as serious an offense to the eye as it is to the ear, for by looking aside one can avoid the visual static. However, this receiver location is one of the very worst from the standpoint of static because of street cars and auto ignition, but as

HARRY R. LUBCKE

*Director of Television
for the Don Lee
Broadcasting System,
Los Angeles, California*



you have seen, it did not bother at all. (The receiver was close to the transmitter: 1/30th mile.)

Similar questions now prevail at the demonstration point 3¾ miles from the transmitter. There seems to be less tendency to questioning on the part of the viewers. They appear to accept the sight-sound demonstration in the home at its face value, and ask more than anything else: "When can we have a set like this in our home?"

A Practical Miniature and Print File Announced

By KARL A. BARLEBEN, JR., F.R.P.S.

ONE of the most important problems in miniature camera photography is the proper preservation and filing of the tiny negatives. The answer to the negative file situation seems to have been answered recently with the announcement of the duplex miniature negative and print files. The duplex outfit will make a tremendous appeal to all owners of cameras using 35 mm. motion picture film, such as the Contax, Retina, Argus, Baldina, Leica, Midget Marvel, Robot, etc.

The negative file costs only \$1.75, and consists of a well-made and good-looking wooden box with twenty-four individual compartments. Into each of these compartments fits a circular cardboard roll, into which a miniature negative film can be inserted. Around each cardboard roll is wrapped a long, stiff paper index, the top of which projects up out of the file, so that the film number can be quickly and easily found.

The print file, which costs \$1.25, consists of an attractive loose-leaf and index album into which the contact prints can be pasted in their numerical or subject-matter order.

The charm of this duplex combination negative file and print file which, together costs only \$3.00, is the flexibility afforded. The owner can arrange his filing system in any number of ways, and it goes without saying that every miniature camera owner should own one of these files for the preservation and filing of his prized negatives.

Another outstanding negative file system is the Universal Multi-Size negative file which comes complete with 150 negative holders, 3½x9¼ inches, at the price of \$2.75.

These two files, the Universal and the Duplex, have been recently announced by the Willoughby Camera Stores, Inc., 110 West 32nd Street, New York City, and the fact that these new files seem to be the most successful answer to a very difficult problem in photography these days, makes it imperative that every serious-minded amateur see them at his local dealer at once.

If your local dealer does not handle these new up-to-date filing systems, which have been designed after exhaustive experimentation and testing, complete literature and information may be secured by addressing the Willoughby Camera Stores, direct.

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Photography On Two Wheels

By KARL A. BARLEBEN, JR., F.R.P.S.

(Dean, New York Institute of Photography)



URPRISINGLY enough—or is it surprising after all—the past few years have seen a tremendous increase in interest in bicycles and motorcycles. Where formerly we saw only a handful of bikes and motorcycles, we now see them by the score. Obviously the down-town areas of large cities are not particularly adapted to two-wheeled riding, nevertheless these vehicles are to be found weaving in and out of traffic in cities as well as scooting along our highways. Just as ski trains in the winter have become popular, so have bike trains in the spring and summer shown great increase during the past few years. This may possibly come as a surprise to many who are not familiar with the situation, yet bike trains are today one of the popular advertising pleas of most railroads. You see city folk don't get much chance to ride into the country, so the railroads organize parties and take them forty or fifty miles out where they can pedal to their hearts' content in all nature's beauty. Similarly, the large city parks have recently opened bike lanes which are proving immensely popular. Just as people go horseback riding in the park, now so do people go bike riding in the park. Artificial, perhaps, but it gives the city dweller a chance at some wholesome fun and exercise right in his own back yard, so to speak, without running the risk of getting tangled up in traffic jams.

Manufacturers estimate many million bike riders in the United States. Sales records don't lie, and the fact remains that America has once again become bicycle-conscious.

As for the big brother of the bicycle, the motorcycle, similar facts hold true. There have been lean years for makers of these vehicles in the past, but during the last few years things are looking up in a most amazing manner. More and more men—and yes, women, too—are taking to the motorcycle for easy, economical transportation and sport. No longer is it considered "low-brow," for some of our millionaire play-boys and society lassies are swinging into motorcycle saddles just as they do horseback saddles. This all definitely shows the direction of the wind, so to speak. Needless to say, the day of the reckless, dirty, noisy motorcycle is past. If anyone may possibly have any doubts about these modern two-wheeled machines, let him watch some of his local motorcycle cops—how easily, quietly and safely they pilot their mounts around. In Europe, the motorcycle has largely replaced the

cavalry. The horse has gradually given way to the motorcycle, and the modern cavalry cavalcade consists now of troopers mounted on sturdy motorcycles instead of the four-footed chargers of years gone by.

But enough of this. The point of this article is to say something about photography on two wheels. Granting that now thousands are taking up riding on bicycles and motorcycles, it is reasonable to assume that many are amateur photographers and as such, want to carry their cameras with them when they go cycling. What a combination—a cycle and a camera! The freedom and sport of the cycle plus the pleasure of making a pictorial record with the camera! Just as there are camera clubs, so there are also bicycle and motorcycle clubs all over the country. These organizations frequently hold trips, runs, races, hill-climbs, games and picnics. How better to record these activities than with a camera? But the camera must be suited to the task, particularly as to size. The bicycle and motorcycle, being essentially vehicles of sport rather than utility, do not permit a great deal of space for the carrying of bulk equipment, hence the camera should be as small and compact as possible in order that it be conveniently taken along.

I recall reading in a British motorcycle magazine (incidentally, in England, and in fact all over Europe, the two-wheeled vehicles are extremely popular) an article telling how the motorcyclist should always carry a camera with him to record his trips. The camera described and also illustrated was at least a 9x12 cm. reflex camera—you know, the box type, perhaps one of the most clumsy types to carry about! Yet the writer of that article advocated such a camera. Shades of Eastman! It would have been just as easy to recommend a more suitable camera, but undoubtedly the idea never occurred to the writer.

It appears to me that at least a folding camera should be recommended for bicycle and motorcycle photography. The smaller the better, all things being equal. The miniature camera, for example, would be ideal. Personally, I like my Plaubel Makina for this sort of thing because, despite its 2¼x3¼ inch negative, it folds up into very flat and compact size. But any reasonably flat camera will be found suitable.

The method of carrying the camera may bother a few uninitiated. With small cameras of the miniature type, an eveready carrying case suspended from the neck or shoulders seems to fill the bill perfectly. Don Townsend of Galion, Ohio, for example, covers many thousands of miles yearly on his motorcycle, visiting the various national and championship races and meets. Through sun and rain he streaks overland on his iron horse, and always his miniature camera is snugly tucked under his leather jacket in an eveready case where it is instantly accessible. If you don't feel like carrying

your camera in this fashion, or its size prevents, there are always other means. On a bicycle, a luggage carrier is a most useful accessory, and can be used for the carrying of various camera and personal equipment. With motorcycles, a similar situation exists, although regular saddle-bags are often suspended from each side of the luggage carrier. These saddle-bags make an ideal place to stow camera equipment, thus leaving the luggage carrier itself free for other duffel.

Whether you make long or short trips on your two-wheeled "horse," be sure to carry your camera with you, for countless new subjects will present themselves. Too, bicycle and motorcycling activities are still sufficiently rare to make the pictures of more than passing interest. In fact, many en-

the photographer cannot approach the scene of action sufficiently to get large images, and the longer focal length lens naturally wins in turning the trick.

To my mind at least, the bicycle and motorcycle present certain definite lines which are pictorial. I can see hundreds of scenes in which these vehicles fit gracefully and smoothly. Get a group of them in a cluster, and all sorts of worthy picture-subjects stand before your eyes—pardon, lens. I can see filtered shots from low camera positions, shooting somewhat upward, showing the machines and riders against a deep-toned, cloud-laden sky. Or again, I can see the machine taking me out into the country where additional pictorial scenes are to be found in abundance. I get the full benefit of the invigorating



Upper left—No traffic problems here with a bicycle. Photo by H. Ledsham. Upper center—Yes, women go in for motorcycling these days. Photo by Karl A. Barleben, Jr. Upper right—Bike race. Photo by Hans Kloss (f:4.5, 1/500 second exposure on Eastman Super X film). Lower right—Motor pacing supplies thrills for pictures. Photo by Hans Kloss. Center—Bathing suits are in style on a bicycle—in Atlantic City. Lower left—The arms of the law via motorcycles.

thusiasts make considerable extra money by selling outstanding pictures of such activities to newspapers and magazines. Horseback riding is too old and common a sport to warrant any but exceptional photographs to be published, but with bicycle and motorcycle action as motifs, the novelty is still sufficient to warrant using. Also, from a hobby standpoint, the personal photo album will take on a new appeal if it includes pictures of the fascinating outdoor activities involving these two-wheeled vehicles.

When attending motorcycle races, hill-climbs, polo and similar competitive activities, the camera with a speedy shutter usually wins. It must be remembered that the machines tear along at a rapid rate, and always there is action which will be sure to blur if too slow a shutter speed is used. Ordinarily, nothing less than 1/200th second should be used, and it goes without saying that a focal plane shutter is preferable to a between-the-lens shutter. A telephoto lens—if you can get one on your camera—makes a mighty useful accessory when photographing close-ups at a distance. In many cases,

air and see everything about me, for I am not hemmed in by glass windows and roof. In brief, the cycle camera combination is hard to beat, especially if you want something a bit different and off the beaten track.

How do I know all these things? Well, I've just taken possession of a brand new Indian Chief "74" with complete equipment and anticipate marvelous times with both it and my cameras. Some may smile sarcastically, but others, who know a little more about life, do not. They realize that while this may be a new thing, its basis is founded on very definite rules. They also know that my new Indian will not replace the car, but will be kept for sport only, just as many people keep a stable of horses for occasional rides and possibly polo. The Indian takes the place of a horse because I am not a millionaire and have to live in an over-crowded city. Maybe you, too, will fall in line and go for a mechanical horse in the future. Why not? And don't forget, it enhances your camera activities instead of suppressing them.

Motion Picture Sound Recording

Chapter XXIX



W E come now in this series of chapters on motion picture sound recording to what might be considered as an outline of the material already presented and to be presented in future chapters. It represents the manner in which the material so far prepared would be arranged, were it to be re-written at some future date. It is, in other words, an attempt to formulate what the author considers an ideal arrangement for the teaching of motion picture sound recording, whether that teaching is conducted in the classroom or through the medium of a textbook or a correspondence course.

This outline was originally prepared by the author at the request of the Technical Bureau of the Academy of Motion Picture Arts and Sciences to be used as the basis for a course in sound recording to be presented at the various motion picture studios for the benefit of the employees of the sound departments. It was considered that while each of these men was an expert in the performance of his particular duties in connection with the operation of the sound recording equipment, he would be a more efficient and useful employee if he had a greater knowledge of the duties and problems of the technicians operating other portions of the recording apparatus. The plan had the financial support of the Federal Government, operating through the Frank Wiggins Trade School of Los Angeles.

The material thus far presented in these chapters follows this outline, but the order in which the chapters were presented is somewhat at variance with the arrangement of the outline. Certain chapters, particularly those on elementary vacuum tube theory and audio-frequency amplification and those on attenuation network and electric wave filter theory, have appeared in other publications. It is hoped that it will be possible to combine all this material in textbook or mimeograph-lesson form at an early date.

A copy of the mimeographed outline that was distributed by the Technical Bureau of the Academy of Motion Picture Arts and Sciences to the technical heads of the Hollywood motion picture studios is submitted below.

ACADEMY OF MOTION PICTURE ARTS AND SCIENCES

Outline of Course in MOTION PICTURE SOUND RECORDING

Charles Felstead, Instructor
Frank Wiggins Trade Evening School

- I. Introduction to sound recording.
 - A. Inventions that made possible the development of motion picture sound recording.
 1. The telephone of Alexander Graham Bell.
 2. The phonograph of Thomas A. Edison.
 3. The vacuum tube of John Ambrose Fleming and Dr. Lee DeForest.
 - B. Types of sound records.
 1. Film sound records.
 - a. Variable density-fixed area.
 - b. Variable area-fixed density.
 2. Wax records.
 - C. The several sound recording systems now in use.
 1. The Western Electric Recording System.
 - a. Film recording—the light valve.
 - b. Wax recording.
 2. The RCA Photophone.
 - a. Film recording—the "rocking mirror."
 3. The Fox Movietone.
 - a. Film recording—the Aeolight.
 - D. The six main departments of the sound recording studio.
 1. The sound stage, microphone, and microphone equipment.
 2. The monitor room and monitoring equipment.
 3. The main amplifying apparatus.
 4. The film recorders and recording devices.

5. The wax recorders—and "play-back" equipment.
6. The re-recording, or "dubbing," equipment.
- E. Arrangement of the sound recording studio.
- II. Essential basic theory.
 - A. Acoustics applied to sound recording.
 1. Sound.
 - a. Pitch.
 - b. Loudness.
 - c. Absorption.
 - d. Reflection.
 2. Musical instruments.
 - a. Their frequency ranges.
 3. The human voice.
 4. Hearing.
 - B. Elementary electrical theory applied to sound recording.
 1. Direct current.
 2. Alternating current.
 - C. Theory of the thermionic vacuum tube.
 1. Diodes.
 2. Triodes.
 - D. Audio-frequency amplification.
 1. Three types of tube couplings.
 - a. Resistance.
 - b. Impedance.
 - c. Transformer.
 2. Gain calculations.
 - E. Mathematics of the decibel.
 1. Calculation of electrical levels.
 2. Gain and loss in communication circuits.
- III. Sound stage and set construction.
 - A. Reverberation.
 - B. The acoustic treatment of sound stages.
 1. Wall and foundation construction.
 2. Interior wall treatment.
 3. Ventilation.
 - C. Construction of sound sets to achieve proper acoustic effects.
 1. Wall construction.
 2. Floor padding.
 3. Set lighting.
 - a. "Inkey" lights.
 - b. Arc lights.
 - (1) Necessity for line filters.
- IV. The microphone.
 - A. Theory of the microphone.
 1. The single-button carbon microphone.
 2. The double-button carbon microphone.
 - B. The condenser microphone.
 1. The condenser transmitter.

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 - a. The one-stage amplifier.
 - b. The two-stage amplifier.
3. The desiccator.
- C. The dynamic, or moving-coil, microphone.
 1. The dynamic microphone amplifier.
- D. The velocity, or ribbon, microphone.
 1. The velocity microphone amplifier.
- E. Repair and maintenance of the microphone.
- V. Sound stage equipment.
 - A. The microphone booms.
 - B. Camera equipment.
 1. Camera motors.
 - a. Floor type.
 - b. Attached type.
 2. Camera booths.
 3. "Blimps."
 - a. Bag type.
 - b. Celluloid type.
 - c. Metal type.
 4. Synchronizing devices.
 - C. Microphone and camera motor cables.
 1. Junction boxes.
- VI. Microphone placement.
 - A. Relationship of microphone and camera to create the illusion of reality.
 1. Sound and image on screen must match.
 - B. Microphone positions.
 1. For close-ups.
 2. For medium shot.
 3. For long camera shot.
 - C. Number of microphones required.
 1. Single microphone recording.
 2. Multi-microphone recording.
 - D. Following action with microphone.
 1. On microphone boom.
 2. By several microphones.
 3. The traveling shot.
 - E. Orchestrations.
 1. Single microphone recording—arranging orchestra.
 2. Triple microphone recording—fixed-position orchestra.
- VII. Monitoring.
 - A. Monitoring equipment.
 1. The permanent monitor room.
 - a. Monitoring apparatus in the monitor room.
 2. The monitor booth.
 - a. Monitoring apparatus in the monitor booth.
 3. Desk-type monitoring equipment.
 4. Portable monitoring equipment.
 - B. The technique of monitoring.
 1. Securing acoustic perspective.
 - a. By monitoring.
 - b. By microphone placement.
 2. Monitoring orchestrations.
 3. Monitoring dialogue.
 4. Monitoring "sound effects."
 - a. Synchronized dialogue and sound effects.
 - C. Associated equipment.
 1. The patch bay.
 2. The public address system.
 3. The monitoring horns.
 - a. The exponential horn.
 - b. The horn unit.
 - D. The "rushes" or "dailies."

BY
CHARLES
FELSTEAD
ASSOCIATE
EDITOR



- VIII. The main amplifying system.
 - A. Western Electric System.
 1. Physical arrangement of the amplifying equipment.
 - a. "Bay" and "channel" construction.
 - b. The battery switchboards.
 - c. The wiring of connection and fuse blocks.
 - d. Jack arrangement.
 - (1) Main jack bay.
 - (2) Channel jack bays.
 - (3) Jack connections.
 - (a) Straight.
 - (b) Multiple.
 - (c) Strap.
 - e. The main distributing frame.
 - f. The relays.
 - (1) Arrangement.
 - (2) Operation.
 2. The direct amplifying equipment.
 - a. The 17B amplifier.
 - b. The 9A amplifier.
 - c. The bridging bus.
 - d. The bridging amplifiers.
 3. The monitoring amplifying equipment.
 - a. The 8C amplifier.
 - b. The 9A amplifier.
 - c. The 200A panel.
 4. Auxiliary equipment.
 - a. The meter panel.
 - (1) Elementary meter theory.
 - b. The volume indicator.
 - c. The attenuators.
 5. Maintenance of the amplifying equipment.
 6. The battery supply.
 - a. Theory of the lead-acid storage battery.
 - b. The battery installation employed.
 - c. Care of storage batteries.
 - d. The charging system.
 - (1) Low-voltage charging motor-generator.
 - (2) High-voltage motor-generator.
 - e. Switching arrangement.
 - B. Movietone amplifying equipment.

(Turn to Page 28)

IN 1937



SOLARSPOTS

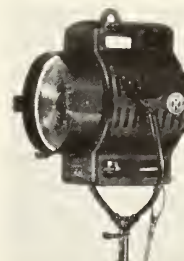
For the Best in Lighting

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JUNIOR



SENIOR

Creating Light-Effects in Technicolor

By W. HOWARD GREEN

THERE should really be no mystery about effect-lightings in color. We have been doing effect-lightings in black-and-white for so many years that we have become quite accustomed to them; it takes something of extraordinary originality to awake more than passing interest. At present, color in its modern form is still sufficiently unusual to excite interest in details which, in monochrome camerawork, are part of everyone's daily routine. Actually, the whole subject of effect-lighting in color could be summed up with the statement that anything possible in black-and-white is equally possible—and a great deal more effective—in color.

One of the most significant facts about lighting Technicolor is that the cinematographers photographing Technicolor productions are progressively decreasing both the amount of light and the number of units needed to light any given shot. If you visited a Technicolor set of several years ago, when the three-color process was first being used, and then saw nothing of color photography or lighting until visiting a set where one of today's Technicolor productions is under way, you would be amazed at the simplification in lighting. There are fewer units in use everywhere. Fewer spotlighting units on the spot-rails overhead. Fewer floodlighting units on the floor. And except in extraordinarily large sets, the old overhead "scoops" have vanished.

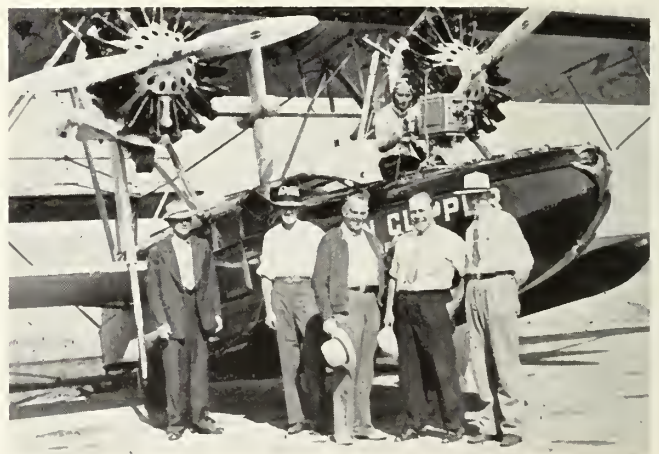
This is the result of a combination of many improving factors. For one thing, Technicolor's laboratory methods have been notably improved. The printing processes now permit the use of a much thinner negative than before. Modern Technicolor negative does not differ greatly from what any first-class black-and-white laboratory would pronounce a good negative.

For another thing, the lighting units which have been developed during the past year for Technicolor lighting are considerably more efficient than anything previously available. Viewed strictly as light sources, the new Mole-Richardson "H. I. Arc" and "Ultra H. I. Arc" spot-lighting units are immeasurably superior to the old Sun Arcs. Instead of casting an intense beam marred by a shadowed center, they project a powerful beam in which the light is distributed very uniformly. Thus it is not necessary to over-diffuse your light, and then use the overlapped beams of two or three lamps to build up to the required intensity. Another even more important improvement is in the color of the light these units radiate. Any color process, if it is to be used interchangeably on the stage and outdoors, requires an artificial light-source that gives light closely matching the color of daylight. The old

Sun Arcs could not do this. Even with the most modern carbons, their light is too strongly blue. The new Mole-Richardson arcs, on the other hand, are infinitely better. The Side Arcs give an almost perfect match for daylight. The high-intensity "H. I. Arcs" need only the very lightest of straw-colored gelatin filters to do the same.

Lastly, and by no means least, is the fact that the Technicolor cinematographers are becoming more and more familiar with the possibilities of the process. Bear in mind that since "Becky Sharp" was released less than two years ago, but five feature productions in Technicolor have been released. At this writing, two more have reached the preview stage, and an eighth is in production. Each of these productions has made us more familiar with the process. We are, I feel certain, much farther advanced relatively than we were in black-and-white when the eighth production was made on Panchromatic film in the far less revolutionary transition from Ortho to Pan. Due to the way the Technicolor engineers record all possible information, advances that any one cinematographer may make in Technicolor technique are available to all.

Thanks to all of these factors, Technicolor lighting has progressed to the point where on the average set, we use about the same number of light-sources that would be used to produce a comparable effect in black-and-white. We use arcs, it is true, rather than incandescents, and our units probably throw a somewhat more intense light; but several outstanding black-and-white cinematographers have stated that they would not be afraid to take



A shot of Technicolor's first trip into the air, photographed at Spirit Lake Washington. Personnel—Si Clegg, assistant director; John Hamilton, assistant cameraman; King Baird, pilot; Ted Santee, grip; Edward Mooney, co-pilot; Wilfred Cline on top of fuselage with camera.

their monochrome cameras on to a modern Technicolor set and stake their reputations on getting a thoroughly satisfactory black-and-white shot.

From all of this it can be seen that effect-lightings in modern color cannot differ fundamentally from their counterparts in black-and-white.

In one respect, however, there is a difference from the way many cinematographers approach a black-and-white lighting. Many of our most capable monochrome artists key their lighting essentially to their shadow-illumination, following the old adage to "expose for the shadows, and let the highlights take care of themselves." You cannot do this in color. There, the thing to be watched is the highlights. If they get too much light, the color is simply washed out, and you have an unpleasant glare of white light on the screen. If, on the other hand, you build your lighting with a watchful eye on the highlights, and let the shadows graduate naturally down from them, your scene will be much more satisfactory. Incidentally, you will often find you can use a lower level of illumination if you light this way—and I think you can get your set lit quicker.

It is hard to specify a fixed ratio between highlight and shadow illumination. No one has yet done it for black-and-white, for each scene demands its own balance. But if one wants something mathematical upon which to hang his consideration of the matter, it might generally be said that in Technicolor it is a good policy to let normal shadows receive about one-third of the illumination the highlight side receives. From this one can graduate down the scale to midnight-black shadows ad lib.

In "The Garden of Allah" we had quite a wide variety of effect-lightings, regarding some of which the critics have commented most kindly. But I think that some of the most outstanding lighting achievements in the picture have passed unnoticed, even by the camera profession. For a variety of reasons, it was deemed advisable to film many of our apparently exterior close-ups on the stage. The peculiar style of lighting best suited to our star, Marlene Dietrich, was one important factor. So, too, was the climate of the Arizona desert in summer! But it gave us the problem of precisely matching natural and artificial illumination.

Naturally, we made careful records of the direction and intensity of the natural light. When we returned to the studio, sky backings were prepared,

carefully painted to reproduce the exact color and gradation of the sky tones, the cloud-formations, etc. Then we proceeded to make our shots, using H. I. Arcs for the key-light, and Side Arcs for the necessary fill-in light. The backings were illuminated with Side Arcs and Scoops. The result was so perfect as to be impossible of detection, even by those of us who knew from having made the shots, which was which. Often we would have these three lighting combinations intercut within a few dozen feet; long-shots made with natural light, and possibly reflectors; medium shots keyed with natural light and H. I. Arc "boosters"; two-shots and close-ups made in the studio, wholly by artificial light. Our only difficulties came on one or two occasions when for one reason or another we tried to use the old-type Sun Arcs either for "boosters" or for a strong key on the interiors; their light was so obviously not the right color to match sunlight that we had a great deal of trouble.

The picture also had several night-effect sequences. In the past, two chief methods have been used in making Technicolor night-effects: Using an overall blue filter, or blue screens on the lamps (or both); and using the regular H. I. Arcs without their regular straw-colored gelatins, with perhaps an occasional blue-filtered lamp. In our night scenes, we approached the problem differently. Working either at night or on the stage, we kept our light to a very low key. Then we kept most of our lighting normal—with the straw gelatins—and here and there an unfiltered H. I. Arc in the back-lighting, to give a little glint of steely moonlight blue-gray. The result was extremely convincing.

For lamplight effects, of course, we used regular incandescent units—chiefly Mole-Richardson "Solarspots," usually with over-volted Photoflood-type globes.

From time to time there has been considerable discussion of the value of projected color—the use of colored gelatin filters on lamps—as a means of widening the range of color light-effects. To my mind, these effects have no place in purely dramatic lighting. They can be spectacular, of course; but they detract from the natural effect we are trying to build in a dramatic film. In a musical revue, or even in a night club dance routine, I would be only too ready to use them. In a film like "Frankenstein" they would be useful sometimes. But in

(Turn to Page 25)



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What Research Means In Making Motion Pictures

By FRANCES CARY RICHARDSON

*Research Department, Twentieth Century-Fox
Film Corporation*

WHAT a dreadful thing it must be to be bored with one's job! That is something we never know in research work for pictures. Sometimes pandemonium—yes, but never boredom.

Working on a production such as "Lloyd's of London," for instance, is a real adventure into the past. The fascination of reconstructing a period of long ago must be experienced to be appreciated.

A general survey or panoramic view of the background of world events of the period, is a good starting place because it has the effect of establishing a sort of backdrop in time in one's mind. Then come the historical events in the country with which we are immediately concerned. These two things help, because to some extent, we already know the outstanding happenings of the past and we feel more at home when we hear of them.

Next perhaps, we consider the principal personages who were alive and active at that time—in the case of Lloyd's there was Samuel Johnson and Boswell. Benjamin Franklin visited in London at the time of the story and somehow we have heard so much of these people, we almost feel like saying, "Why, I know him!" Others were Richard Sheridan, actor and playwright; Lord Wellington, Beau Brummel; Sir Thomas Lawrence, the artist, and George IV of course. None of these was introduced in "Lloyd's" except George IV and Sir Thomas Lawrence. However, they might have been, and research must be ready with descriptions of celebrities who may be used in the picture, either for background atmosphere or to place the period in people's minds.

The Casting Office must know the height and weight of the person to be represented, the color of his eyes and hair, and whether he wore a beard or was clean shaven at the time of the picture. In the case of Nelson, who lost an eye and an arm in battle, we must be sure which eye was lost and which arm. In the case of John Wilkes Booth, who appeared in "Shark Island," we must know which leg it was he broke when he fell from the box in the theatre.

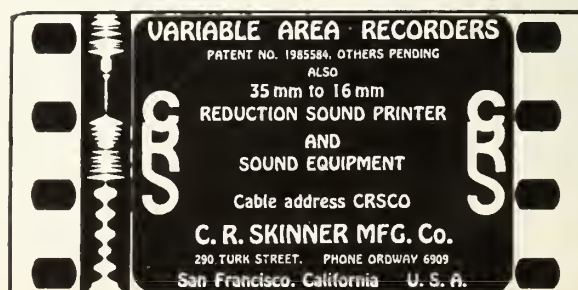
Incidentally, I might add, much paraded as a "movie boner," was an incident which occurred in this picture—Booth shot Lincoln with a pistol but appeared a minute later on the stage handling a dagger. As a matter of fact, according to eye witnesses as well as indisputable fact, this is just what occurred—Booth shot Lincoln, grabbed his dagger and stabbed the major who rose to grapple with him, then jumped upon the stage—his dagger still in his hand. We should start another column and call it, "Boners of Movie Boner Hunters."

Further foundation for research for historical pictures must include the general social life of the rich and of the poor, the homes in which they lived, what sort of furniture they had—how they entertained their friends, what they ate for dinner, what flowers grew in their gardens and how they watered them, how they got from place to place—their carriages and coaches, carts and wheelbarrows. These and all manner of things more that went to make up the every day life of the people who must be made to come to life again in their own surroundings by the magic of the screen, must be ferreted out in both description and pictorial form for the writer and the art director.

Without meaning to encroach upon the dignity of the industry—one might liken the making of a motion picture to the putting together of a jig-saw puzzle! The representatives from the many departments fashion and prepare their "pieces" which will be taken by the director and fitted into the particular niches for which they were made. The script prepared by the writer is the model for the finished picture. This simile persists in one's mind as the different members of a production unit come to the Research Department for answers to their various problems.

For instance, the scenic artist comes seeking a picture of an Alpine Village with the snow-capped mountains in the distance for a background "shot" in let us say, "One in a Million." He is followed by the property man who must have a picture of a sleigh such as is used to meet a train in a small village near San Moritz; next comes the painter, who must make a license plate for a taxi on a street in Paris, and he in turn meets the costume designer, who has come to see "winter costumes" of the Swiss peasants. The art director wants to know what the interior of a small Swiss station looks like and also the lobby of an inn, while the man from the insert department must have a copy of the program used at the winter Olympics.

For quite another picture a call comes that we must rush a wire to New York asking our office there



to ascertain a non existent number on Fifth Avenue, near Forty-second Street, and a fictitious telephone number of that district. They are to be mentioned on the screen and every precaution is taken to avoid offense of any kind which might arise through use of real addresses or telephone numbers.

Because it is difficult to describe a noise only a few questions come from the sound props department. The kind of ship bells, and methods of distress signaling used by ships at different periods are questions which have presented themselves from time to time, and "What kind of a noise does a jackal make?" is another that caused considerable search before an adequate description was found.

The make-up department is always interested in beards, sideburns and whiskers of any kind. When anyone is to play the part of a character famous in history—it is necessary to collect all available pictures of him and views from as many angles as possible for the use of the make-up man.

As much research material as is possible is gathered together as soon as we are notified of a coming production. This is sometimes even before a writer has been assigned—when a published story or play is the subject of production. However, where an original story is concerned and develops on the studio lot, we can do very little until a treatment is accepted and we have something definite to work with. The research notes and pictures are gathered and bound together and used constantly first by the writer and later by the art director, property man, costume department, etc. No matter how much research is prepared before hand, however, there are always last minute questions and "finishing touches" which come up and cause us no end of wild flurries. No description of studio research work would be complete without recounting some of the characteristic questions which come to us to answer:

A voice said quite soberly over the phone the other day, "Can you please tell me what is the favorite food of the catfish and the bullfrog?"

The dialogue director asks for a translation and correct pronunciation in Latin of "The right ear of the American moose." After we found him that it was decided that it was the left ear they wanted after all.

"An ash-can in Central Park about 1912," almost

licked us, but we finally found a perfect specimen of one with lettering on the side.

"Please find us a passage in Shakespearian in which a man having just slain his enemy is orating over his body." In trying to find an answer to this one we were stumped frequently by the fact that so many of Shakespeare's characters beheaded their enemies—which wasn't the action wanted.

Missionaries just returned from China came to our rescue in providing pictures of Chinese school children of the present day for Shirley Temple in "Stowaway."



Raider Olson, Local 659, gets a snap shot of his little daughter and her dog strolling in the woods.

For "Dimples" we had to find a picture of a stove such as they cooked fish in, in the street in 1850.

We are frequently consulted as to what poisons may best be used to kill people and leave little or no trace and the symptoms of certain poisons. These are questions that occur in murder mysteries, of course.

From a set dresser we get a frantic call at the last minute, "What kind of flowers would be used at a spiritualist meet?" Others that have caused us amusement and sometimes alarm are the following:

"A list of famous dragon killers, please."

"How was food served to prisoners in Maryland State Penitentiary in 1900?"

"Was lump sugar used in 1790?"

"Did anyone smoke short pipes in the 18th Century?"

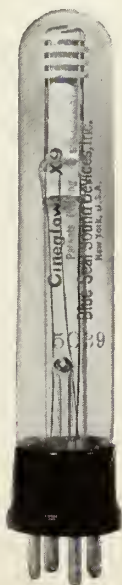
"Please tell me the dimensions of a bale of cotton."

"How do you say 'ice worms' in Latin?"

A call comes at 9 o'clock at night—"We must have an expert in inoculating guinea pigs on the set at 8:30 tomorrow morning; can you find us someone?"

Our prize question in a long time, however, is this one:

"What is the best market for mummies?"
Now I ask you!



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(Description of Plastic Motion Picture Projection Process Invented by Dr. Sebastiao Comparato. Trade Commissioner J. Winsor Ives, Rio de Janeiro, Brazil.)

Projection in Relief—Third Dimension

The most important problem of the moment in connection with cinematography, for the solution of which a great number are striving, is to find a means whereby plasticity and relief may be afforded to images projected, that is, eliminating the impression of the post-card photography.

All investigators have based their principles on the theory of the stereoscopic binocular vision, using devices of complicated shape and making obligatory for the observer to use selective eye-glasses in order to perceive the third dimension during a projection.

The theory of stereoscopic vision dates back to 1584, later confirmed by M. Wheatstone in 1838, when he presented his primitive reflection stereoscopic apparatus, improved by Brewster in 1843, who substituted for two prisms the two glasses then placed at angles.

Upon confirmation of the stereoscopic theory that the binocular vision is the cause for the sensing of a third dimension, all researches to obtain projection in three dimensions were based on this principle. Among others of less importance, there appeared the relief films based on the processes of Dr. Doyen, in 1900; Grivolar, in 1901; Reynaud, in 1902; Schmitt and Dupuis, in 1903; and, recently, the anaglyphic process of L. Lurnier, in 1933.

Under these conditions, in motion picture projection the relief is perceived exactly as in a stereoscopic apparatus when selective eye-glasses are used. The use of glasses, both interruptive and analytical, besides being troublesome, also demand effort in accommodation. If for a common projection the comparatively small effort of accommodation, from the physiological standpoint, is an obstacle, it is easy to understand what this theory would involve if it left the laboratory to enter the practical field. The binocular stereoscopic vision is abnormal in relation to the physiological vision, for it exaggerates, conceals and increases the natural effect.

Even admitting that the usual stereoscopic relief illusion were satisfactory, by its exaggeration, the psychic conception would always be insufficient from the artistic standpoint.

The new so-called "Cineplastico" system is not based on the theories of stereoscopic binocular vision but on the monocular vision. As a matter of fact, the binocular vision is not the only one that can fulfill the three essential conditions for relief: lineal, color and air perspective. The monocular vision can also distinguish things in nature with plasticity and relief; its visual power, however, diminishes rapidly as the planes remove themselves from the first plane to the infinite, and there is also lost a great part of the lateral sense of direction.

The "Cineplastico" system avails itself of the cameras, projectors and films being used at present, modification to be made only on the optical part of the projector and on the screen where images are projected. As a matter of fact, for the optical part of this projection, lenses absolutely similar to the crystalline of the human eye are used. Still following the make-up of the eye, yellow or amber colored rays are employed for the luminous part, these rays being considered as more visible and illuminating, as well as completely harmless, as will be seen. As a matter of fact, the series of monochromatic lights which, when put together, give us the sensation of a visible white light, corresponds to a group of irradiations which go all the way from extreme red to ultra-violet, being measured by wave-lengths. Our eye is made in such a way that it separates these two extremities, both harmful to it; it only sees the rays which are embraced from violet to red, thus defending itself from the infra-red and ultra-violet rays. One must recognize the wisdom of Nature which reserves for its use the irradiations embraced between these two extremities, isolating the most active and utilizing only the least noxious rays of both these groups.

The screen has qualities of refraction and reflection which guarantee greater visibility and luminosity to the images projected. This screen, which was made to conform with the anatomy of the human eye, possesses also a retina with the function of reflecting back to the eyes of the spectator the images printed on the film, which images, before this occurs, go through

the crystalline, or the lens that we have mentioned, and a series of layers, also greatly similar to the layout of the human eye, set up in such a way that they produce the interference phenomena necessary to complete the group of physical and physiological phenomena which give to an image the perfect sense of plasticity and relief. In order to complete this effect, the special screen designed in the new process is placed at the greatest possible distance from the audience, constituting, by means of lateral edges fashioned like lighted side-scenes, a sort of stage without any visible background, for these side lights are purposely distributed along the outline of the screen so as to give the illusion of a dark void where the views projected succeed themselves as if everything were floating in space without a point of support.

The screen is made of copper or copper alloys; its surface subjected to a process of uniform polishing in order to afford perfect reflection. The surface thus polished is covered with a uniform layer of gelatine, over which there is made to adhere a thin layer of gelatinous gutta-percha paper. Finally, the exposed surface of the gutta-percha paper is submitted to the action of a solution of colloidal silver, thus presenting the aspect of a mother-of-pearl coloring. The lateral part of the rectangular screen is outlined with curved edges at 90 degrees, of the same material as the rampart, the whole set-up having the appearance of a stage. In the periphery of the outline of the stage the illumination is made by indirect rays of adequate colors. Three series of colored lamps are also placed on the floor of the stage.

In order to obtain the interference phenomenon and the modeling of the images, it is necessary for the films to be projected on this screen by means of special lens, as mentioned above, the dioptric degree of which varies according to the size of images projected and distance of the screen, this degree to be calculated in such a way as to permit a close or remote vision to the human dioptrical apparatus without the necessity for any accommodation, that is, to afford complete relaxation of all the muscular fibres of the human eye, this being a condition of the utmost importance in order to prevent fatigue to the eyes. Aided by the amber-colored or yellow rays, there is thus entirely eliminated the danger of such phenomena as chronic headaches, nausea, congestion of the sclerótica, etc.

The new process, besides affording plasticity and relief to images, contributes also to the hygiene of the most important sense of the human being, which is the eyesight.

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California the Beautiful

From the collection
Laurance L. Hill, 1937

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Left, top — Roy Knabenshue noses the first dirigible balloon into the circumambient.



Left, below — The far-flung San Gabriel Valley with its spreading live oaks, its browsing flocks and its riches in Spanish legend and folklore.

Left, third from top — The Shasta Daisies at the foot of the snow-mantled Sierras. In all the world no scene like this.



Left, bottom — Here is one of the prize-winners of an early flower parade in Hollywood. Note the confidence displayed by the lady driver of early days.



Bottom, center — A scene in the very heart of Hollywood Boulevard. Only a step from the world.

That Was

ate
n.

February num-
all devote earn-
its newly-dis-
y magnificent
heights, desert
coastline.



*The late Laurance
Landreth Hill, His-
torian.*



*Right, top—When horse
flesh was horse flesh and
lovely ladies handled the
ribbons as skillfully as
any man. Here we have
three thoroughbreds and
a snappy phaeton.*

*Right, above—Poppy field
—Good Old Baldy, snow
capped, looks down upon
our rapidly disappearing
deserts.*



*Right, above—Old Casa
Verdugo — Leagues and
valleys and literally coun-
ties paved with Golden
Poppies, the gorgeous
and beloved state flower
of California the Golden.*



*ood on Prospect Avenue, now Hollywood
the immortal artist, Paul de Longpre.*

*Right, bottom—Music
under the roses at
old Casa Verdugo,
one of the most
charming ranchos in
the beloved "Blue
Verdugo Hills."*



AMATEUR MOTION PICTURE DEPARTMENT

Edited By F. HAMILTON RIDDEL



That Prize Winning Amateur Film

By F. HAMILTON RIDDEL

WANTED—A Master," first amateur movie effort to receive professional release on the screens of the country as a Pete Smith Specialty, just released, is a masterpiece of story-telling simplicity. An intensely human sort of movie, with superb treatment, concerning the adventures and mis-adventures of a stray little pooch who, discovering that the City Dog Pound is to claim all stray canines by 3 p.m. of a day, sets out in search of a master and a home. After many hours of fruitless wandering, from the high streets to the low, the pooch is finally successful; and the film fades out on a victory-wagging tail at the corner cop who earlier had cast a caustic eye on the little mongrel.

A simple premise, isn't it? But the film has worlds of **appeal**. Frankly, we sat through two feature films and newsreels, **twice over**, to view this perfect little short subject. You can have your run-of-the-mill Hollywood productions but for honest-to-goodness merit and entertainment, by all means don't miss "Wanted—A Master"! Every dog owner, dog lover (even those who don't) will be captivated by this simple tale of a pooch.

Basically, the film is simplicity itself. But its appeal is universal. Most of the shots are telling told in close-ups, crisp sequence, and with an absolute maximum of "appeal." No photographic tricks were necessary—any home-movie camera could shoot the picture. Tempo is well maintained, culminating in an exciting few minutes when it seems Hector the Pooch is doomed to certain death in his frantic quest for a master.

Pete Smith's commentary, couched in the vernacular of the homeless pooch, blends beautifully into the story telling propensity of this film in most effective manner. No suggestion of a wise-crack (so often included in short subjects) is present. Just an understanding dialog which delightfully supplements the action of the story.

Even the musical score of the film has not been neglected. It is lively, it is foreboding; and wholly in keeping with the film. Take our word for it—don't miss "Wanted—A Master"!

We are happy to give the following, received from Metro-Goldwyn-Mayer Corporation, regarding

the Pete Smith-Liberty Amateur Movie Contest, just announced, which was inspired by "Wanted—A Master." The competition presents a splendid opportunity for the amateur cine worker in 8 mm. or 16 mm. not only to gain national prominence, but professional recognition and cash awards as well in the pursuit of his favorite hobby. Home movie makers are urged to avail themselves of the exceptional opportunity afforded by the contest.

Hollywood recognition has come to the amateur movie makers of the nation in the form of a contest conducted by Metro-Goldwyn-Mayer and announced in the current issue of Liberty Magazine, in which professional opportunity is offered to the estimated 750,000 users of 16 mm. or 8 mm. amateur movie cameras.

Credit for focusing the attention of the motion picture industry upon the potential talent to be found in the ranks of amateurs goes to a pair of twenty-year-old youths, Gunther von Fritsch and Arthur Ornitz, whose film "Wanted—A Master," just released by M-G-M, bears the distinction of being the first amateur effort ever to reach the professional screen.

Storming the gates of Hollywood with a film they had made with a small 16 mm. home movie camera, these boys claimed the attention of Pete Smith, impresario of M-G-M's short films. Smith and other top-ranking production experts were amazed by the remarkable talent demonstrated in this film—the story of a homeless dog told with subtle simplicity and enacted by their own mongrel pet, "Kiwi." Then and there the boys and their dog were contracted to come into the studio to reproduce their film on professional equipment for release as a regular Pete Smith Specialty, and decision was made by the assembled executives to launch a sincere search to discover more such talent among amateur movie-makers.

Known as the Liberty-Pete Smith Amateur Movie Contest, the competition offers \$500.00 for each amateur film which can be similarly reproduced as an M-G-M short subject. The number of such films for reproduction is limited only by the merit of the entries received. In the event none of the films submitted are considered worthy of reproduction, a total of \$1,000.00 in cash awards is to be divided among the best entries.

In addition to the film awards, M-G-M is prepared to offer contracts for at least three kinds of talent which may be unearthed as a result of the contest. According to the announcement, each entry is to be carefully scrutinized for potential directorial talent, for amateurs who demonstrate originality in story treatment, and for persons appearing in the amateur films who express acting talent or screen personality.

Details of the Liberty-Pete Smith Amateur Movie

Contest, conducted in association with Metro-Goldwyn-Mayer Studios, follow:

The Prizes

First Prize	- - - - -	\$500
Second Prize	- - - - -	\$200
Third Prize	- - - - -	\$100
Four Prizes, each \$50	- - - - -	\$200

The Rules

1. Anyone, anywhere, may compete, except employees of Macfadden Publications, Inc., Metro-Goldwyn-Mayer Corporation, their affiliated corporations, or members of their families.

2. All entries submitted must be not less than 200 nor more than 300 feet in 16 mm. or 8 mm. film.

3. Entries will be judged on the basis of **audience interest**, originality of subject-matter, and effectiveness of technique.

4. In the accompanying table of awards, Liberty and M-G-M are to pay \$500 cash to the winner. Metro reserves the right to select additional entries, to be reproduced in full or **in part**, upon payment of \$500 for each and every entry so selected. The number of entrants so selected is limited only by the merit of the entries received. The next **six** best entries, who are designated as **runners-up** but whose entries will not be reproduced, will receive the amounts set forth in the prize schedule in the order of their excellence.

5. Subjects must be in black-and-white film and may be either fact or fiction.

6. Subjects may be cast with actual characters or such roles re-enacted by amateur actors as circumstances warrant.

7. Subtitles are to be used to maintain continuity, but these are to be kept to a minimum.

8. The judges will be Pete Smith and Fred C.

Quimby of Metro, and Fulton Oursler of Liberty, and by entering you agree to accept their decisions as final.

9. Metro shall have the right to change, adapt, add to, or take from the selected entries as it sees fit.

10. Metro is to have all motion picture and all other rights in and to the amateur movies selected in this contest, and shall have the right but not the obligation to remake same as Pete Smith Specialties, to be distributed throughout the world by Metro, and may copyright such in its own name.

11. The material submitted by the entrant must be wholly original, must not be libelous, and its full use granted Liberty and Metro must not violate any rights of others.

12. The material submitted by an entrant may be similar in many respects to pictures submitted by other entrants, and if an entrant's picture is not selected for reproduction, such entrant agrees that he will not at any time assert, or attempt to assert, any claim that any material contained in his picture has been used in any photoplay which later may be produced by Metro.

13. Send all entries, prepaid and legally packaged, addressed to Pete Smith-Liberty Amateur Movie Contest, P. O. Box 556, Grand Central Station, New York, N. Y. Any entries sent to Metro direct will automatically serve to disqualify same in this contest. No entries will be returned.

14. This contest closes on February 27, 1937, and entries received later than this date will not be considered. Winners are to be announced in the April 10 issue of Liberty.

15. Official Entry Blanks, which must accompany each entry submitted in the contest, are to be found in Liberty Magazine.

RIGHT OFF THE REEL

By F. HAMILTON RIDDEL

NEW Year's Resolutions: Right at a period when everyone is making New Year resolutions is also an opportune time for the cine worker to pause in his work, take stock of last year's filming, and make a mental note on how he can improve this year's output of home movies. Cinematography, continuity and editing should claim his careful attention. Compare the work you have done, see where past mistakes can be avoided in the future. It's open season for taking stock!

Pantomime: It strikes us that amateur cine workers contemplating production of a "story" film, can read with much profit that interesting and instructive book on pantomime, entitled "The Art of Pantomime," by Charles Aubert, published by Henry Holt & Company. Translated from the French by Edith Sears, the book has numerous graphical illustrations depicting the purely visual technique of acting. Every conceivable detail, from facial expressions to gestures, is included. Since amateur film technique deals primarily, for the present at least, with silent pictures, careful study of this book will go a long way in obtaining truly professional results in your "story" film production.

Reversal vs. Negative-Positive: We hear a great deal of argument pro and con regarding the two existing film systems, Reversal and Negative-Positive. In the interest of truth, it seems to us that

the relative merit of the two systems has been very well stated by an author on home-movies, whose name unfortunately has escaped us, who says: "Under the microscope, no doubt, it can be proved that the best reversal stock has a finer grain than a positive print from a negative; but so long as the grain is below certain size (determined by the ability of the human eye to see fine detail) the screen image is bound to appear grainless." Nowadays, it seems this subject is unimportant as compared to the other advantages of the respective systems. Thos it becomes a matter of personal choice among movie makers. Try out both systems, weigh their respective merits by personal experience. Only then are you in a position to come to a definite conclusion in the matter of Reversal vs. Negative-Positive.

Friendly Tip: The beginner in cinematography, until he gets the "feel" of his outfit, oft times attempts exposures that are not sufficiently lighted. The result, of course, is a badly underexposed film which appears only as a dark mass on the screen, with a few ghost-like outlines. Invariably, the tyro will refuse the advice of the oldtimer to discard such scenes. A moment's reflection, however, will ultimately convince the beginner that boring his audience with "blank shots" is very poor procedure. So, if you **must** preserve the blanks, by all means delete them and keep them on a reel you will only run for yourself. Later, as your cine work improves,

you will find it best to discard such blanks entirely.

Backlighting: Always to be used with good effect in regular black and white filming, backlighting may be equally effective with color film. It adds additional sparkle to any movie. A small spotlight, focused on the head of the subject, is the

best means for backlighting. In calculating the exposure, do not include this additional light source. The highlight will take care of itself, but does not add sufficient strength to the general lighting of the subject to be included in making exposure calculations.

A New Educational Film

A single-reel Paramount production made expressly for the school field, and distributed by Bell & Howell, marks the most outstanding recognition of the importance of that field thus far extended by any major producer.

Based on epic films of the past, the "Covered Wagon" and "Thundering Herd," and embodying several scenes from the current feature release, "The Plainsman," this educational short, "Spirit of the Plains," has great school appeal. Two recognized authorities on visual instruction, Miss Mary Clint Irion of the Los Angeles County Schools, and Miss Marion Evans of the San Diego Public Schools provide the educational sponsorship of the production. Copies were ordered by the Chicago Public Schools for inclusion in their social science film library, immediately the subjects became available. The teacher training class in visual instruction at Northwestern University, the convention of the National Association of English Teachers at Boston, and other educator groups welcomed previews of this short on their programs. E. C. Waggoner, Secretary-Treasurer of the Visual Instruction Section of the National Education Association, rented the film for showing in his high school at Elgin, Illinois, immediately upon screening the first 16 mm. print.

For years, teachers and others have urged the producers to make available the lavish sets and careful research work on costumes and other detail now repeatedly found in every major feature, for short topical films intended for classroom, school auditorium and general non-theatrical use. The most important previous development of this type was the cutting of a silent short, "In Days of Chivalry," out of the United Artists' "Robin Hood," also by a group of Los Angeles visual instructionists. However, the current production, "Spirit of the Plains,"

bears the distinction of production and release simultaneously with its mother film, the background and costuming of which is utilized.

This far-reaching step on the part of Paramount will probably turn out to be smart business; for anyone who sees the logical and inspiring topical short will be more than likely to want to see the entire film that treats much more extensively with the same locale and period. This in no way implies that the short subject is to be considered in any sense a "glorified preview." It stands entirely on its own feet, and will in all probability be running for years after the feature film is buried in Hollywood vaults.

The "Spirit of the Plains" follows an original theme by Ralph Jester, that opens just as the Civil War ends. President Lincoln is seen, predicting to his cabinet that millions of demobilized soldiers will find new homes and new lives in the great untamed West. We see the bustle of getting under way on the further shores of the Missouri River, the lonely trek across endless plains, the bloody revolt of the Indian as his food supply is threatened in the slaughter of the buffalo, then the cowboy on the open ranges, gradually confined as steel rails and barbed wire change the way of the West. Finally the combine-farmer of the great wheat lands finds his enemy in the terrific dust storms, battles courageously against odds indicating that the spirit of the plains remains absolutely undaunted.

An intelligent narrative follows the screen story. It is entirely free from the "wise-cracks" that infest most theatrical "educational," and is varied in pace and content by occasional dialog from the feature, and by songs and orchestral musical background.

The film is being distributed through the Bell and Howell dealer and branch library organization.

Cinema-Tidings

Amateur Motion Picture News

Lower Priced B. & H. 8 mm. Cameras Announced:

Bell and Howell Company of Chicago makes the important announcement that it has started delivery on two new lower priced Double Eight motion picture cameras.

These cameras differ from the company's other, and earlier, Double Eight model (134-A) only in the following respects: 12½ mm. F. 3.5 instead of 12½ mm. F. 2.5 lens; a handset footage dial rather than automatically reset footage dial; no viewfinder field area masks. The lens seat is the same as the present Filmo 8 mm. cameras so that lenses may be interchanged at will.

The new cameras are Model 134-C with 8, 16, 24 and 32 speeds at \$49.50; and Model 134-D with 16, 32, 48 and 64 speeds priced at \$54.50.

Improved Kodak Retina Announced: The Eastman Kodak Company announces an improved Kodak Retina, 35 mm. miniature camera, which is being offered at the same low price (\$57.50) as the original model.

Foremost in the improvements is the adoption of the Kodak Anastigmat Ektar F. 3.5 lens. This new super-lens is ground with greatest precision following a newly computed formula. Notable for its critical definition even at full opening, the F. 3.5 Ektar is said to produce excellent negatives. Not only have spherical and chromatic aberrations been reduced to a minimum, but the lens has a flat field and is unusually free from astigmatism. Generous enlargements which are amazingly sharp and rich in detail may be made from the negatives produced by this new lens. The lens takes the screw-in mount Retina filters, N-1, N-2 and N-3, Kodak Retina Portrait Attachments A and B, and Kodachrome and other filters in the No. 17 slip-over mount.

Details of the improved Kodak Retina follow: Thirty-six pictures on Kodak Panatomic Film, Kodak "SS" Pan, Kodak Super X and Kodak Infra-Red Film in daylight-loading magazines. Eighteen pictures are to be had on Regular Kodachrome or Type A Kodachrome. Picture size is 24x36 mm., approximately 1x1½ inches. Equipped with Kodak Anas-

tigmat Ektar F. 3.5 lens of 50 mm. focal length; Compur-Rapid shutter with 9 speeds from 1 to 1/500th second, bulb and time, with plunger release. The improved Retina camera has enclosed direct view optical finder, depth-of-focus scale, and large knurled knobs for rapid film winding and rewinding; automatic stop accurately centers each exposure. Exposure counter and film release. Duplicate focus and diaphragm scales for horizontal and vertical pictures. There is a hinged back with improved safety latch, tripod socket, and the camera's body is die-cast to assure rigidity. Dimensions of the improved Retina model, closed, are 4¾x3x1¼ inches; weight, 15½ ounces. It is covered with tooled genuine leather and handsomely trimmed with satin-finish chromium, which adds much to its smart appearance.

8 mm. Univex Announced: Something new, something most reasonably priced is the Univex 8 mm. home movie outfit, just announced by the Universal Camera Corp., 32-46 West 23rd St., New York City. The camera, a straight eight, is priced at \$9.95 and the 200-foot capacity projector lists at \$12.50.

Standard lens equipment on the Univex camera is an F. 5.6 but other lenses, including speed and telephotos, may be used due to an interchangeable lens mounting. A special single 8 mm. film, retailing at only 60 cents, in 30-foot rolls, is used. Two types of film emulsion are available. Threading the camera is easy, there being no sprockets or complications. A footage meter is incorporated, including built-in exposure guide. Small in size, with streamlined designing and case of die-cast aluminum in satin black and oxidized silver trim, the Univex presents a smart appearance.

The Univex projector, matched with the camera, affords many features of higher priced outfits. Forced draft cooling, automatic shutter for stills, framing and tilting devices, pre-focused lamp, automatic rewind, separate switches for lamp and motor are all incorporated. The projector is light in weight, yet sturdily built. Threading is straight in line with feed and take-up sprockets. A one-inch projection lens is standard equipment, although other projection lenses are available and interchangeable.

Many reasonably-priced Univex cine accessories are listed, the most novel being a special camera case for the Univex 8 mm. which allows movie making without removing the camera from the case.

New Titring Aid: Credit for introducing a valuable titling accessory goes to the Wood-Regan Instrument Company, of Nutley, New Jersey, which has recently announced the Wrico Lettering Set. Uniform title lettering may be obtained with the Wrico, and no previous lettering experience is necessary in using the device. Set No. 20 is complete in itself and contains everything needed in making titles. It is packed in a handsome wood cabinet and is a cine accessory that will last indefinitely.

Chicago Cinema Club, Inc.: Annual election of the Chicago Cinema Club, held recently, elected the following members:

President—Charles Schelter.
Vice-President—J. P. Fitzwater.
Secretary—Peter S. Bezek.
Treasurer—M. S. Lotterman.

President Schelter outlined an extensive program which would emphasize increased meetings devoted to the education of new amateur members, as well as meetings devoted to analysis of members' films taken during the summer.

Membership of the club now totals almost one

hundred fifty, and weekly meetings are held each Thursday. Visiting movie makers from out of the city are invited to attend.

New 8 mm. Ditmar Camera: Burke and James, Inc., 223 West Madison St., Chicago, announce importation to the American market of the 8 mm. Ditmar cine camera. While the camera is new in the United States, it has been on the European market for several seasons and has proven a very interesting item.

The Ditmar 8 mm. takes the conventional 25-foot rolls of double 8 mm. film, is solidly built of metal, with leather covering and bright metal fittings, and weighs approximately 3½ pounds. Spring motor capacity is 15 to 20 feet at one winding; 16 and 32 speeds are provided; changing from one speed to another may be done while the camera is in operation—to secure unusual effects. A special hand crank is also provided, permitting the taking of individual frames.

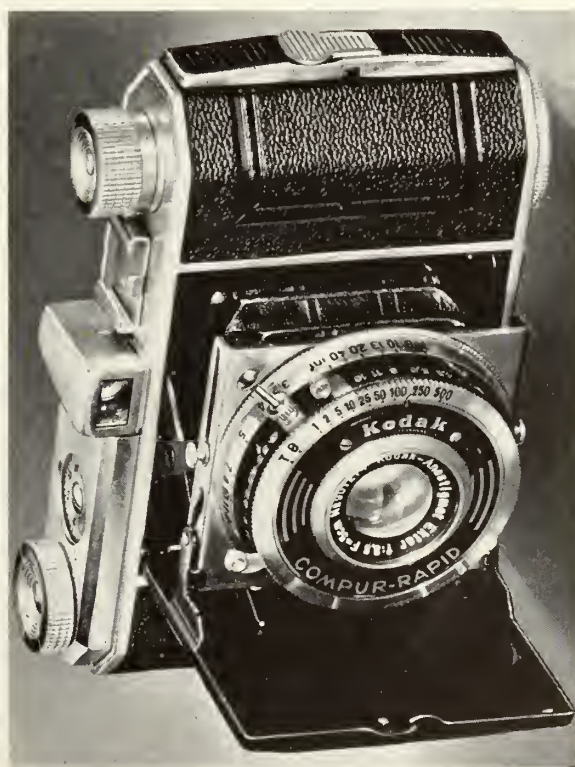
Remote control of the lens diaphragm is had in the Ditmar which permits aperture change while filming. Compensation for parallax is provided for in the sliding piece of the finder, through which is not only seen the subject being photographed but also the footage indicator and lens aperture indicator. A recessed lens mount provides an effective sun shade.

The 8 mm. Ditmar is offered with F. 1.8 or F. 2.5 lenses. Accessory equipment includes portrait attachment, wide angle and telephoto special lenses, as well as color filters and carrying case.

Word from Weston: The record sale of high-grade cameras for Christmas gifts this year will undoubtedly widen the group expecting to lift their photographic work out of the "hit-or-miss" class. In this situation, a word of warning to novices who expect their new cameras immediately to outperform more lowly equipment of the "box" type seems desirable.

To new owners of high-speed minicams, equipped with F. 2 or even F. 1.5 lenses and speeds ranging to 1/1000th of a second, serious initial disappointment often results from confusion due to the wider

(Turn to Page 23)



Early Steps in the History of Motion Picture Industry

By G. W. (BILLY) BITZER

Any yarn about D. W. Griffith or "The Birth of a Nation" or "Intolerance" must of necessity be news—for it never grows old.

Now here are excerpts from a letter written some time ago to the editor from G. W. (Billy) Bitzer, chief cinematographer of Griffith's early works, those great land-marks of the progress of the Motion Picture Industry—the early records of its history.

The first part of Billy's letter was, of course, devoted to personal matters and chatter about fellow-cameramen in both New York and Hollywood, but soon Billy cut loose about "D. W." and "D. W.'s" pictures in his own inimitable style and it went something like that which follows:

The Magic Carpet—"Of all motion pictures ever produced, none were more beset with difficulties than 'The Birth of a Nation' and only the belief and indomitable spirit of David Wark Griffith could have carried it to a successful conclusion. Yet it is the one picture that made money whenever and wherever it was shown. What followed in its trail reads like pages from a fairy tale.

"No other theatrical attraction has ever grossed an amount anywhere near it. It is impossible to arrive at the gross earnings for the theatres, but at any rate it is known to be over eighteen million dollars. Every man who handled the picture made not only money, but a big reputation. It started Louis B. Mayer on a money-making career, William H. Clune and many others. The cameraman was treated unusually well—I know he had two hundred and forty thousand before the smoke cleared away, and while it was still clearing away from those sand bag trenches and Sherman's March to the Sea, evacuation scenes, etc. Now, do you believe I once had a gold fountain pen. Mr. Griffith made over a million dollars. The author, Thomas L. Dixon, who wanted \$25,000 and something to say about the direction, got \$25,000, no direction say and a promise of earning percentage. What he really received was ONE MILLION DOLLARS—the highest price ever paid for any scenario.

"Everybody that had anything to do with the picture was made happy. It was the great mortgage-lifter for many theatres. Even today 'twenty years after' when the radio is turned on in the evening for Amos 'n' Andy, the music you hear for their opening was written especially for Mr. Griffith, by Joseph Carl Breil, as the love theme number for Lillian Gish. We called it 'Love's Sweetest Story.' It was a beautiful thing when played by our orchestra. Whenever I hear it now, no matter where I may be, a feeling of great joy comes over me and thrills run up and down my spine, even though it is not played as well as it was in the good old days. Do you like that number? Yeah, it's pretty nice. I never mention why—that's water under the bridge. Still there must be something to it, when it's still played every day after twenty years.

"The picture was road-showed and each show

carried its own complete orchestra, its own operators, sound effects, sheet, in fact everything except the sour milk which they used to whiten the sheet. If the theatre happened to have its own projection machines, they were taken out and the first time in pictures TWO PROJECTORS were used (our own), to eliminate the 'Wait One Moment, Please' while the reel was changed which had been in vogue up to that time. This also eliminated unsteadiness, breakdown, undue flicker, etc. I always think it was the first \$2.00 picture, although of this I am not sure. Many of the new blood would 'pooh! pooh!' these facts set forth, because it's an old-school picture, but they are true, nevertheless.

"'The Birth of a Nation' practically was made in our studio backyard, Reliance-Majestic, corner of Sunset and Hollywood Boulevards, excepting the battle scenes which were taken on the old Universal Field, and a couple of cotton field scenes, made at Calxico. The fir tree scenes were made at Big Bear—and nothing anywhere else. Don't forget, we were making 10¢ pictures for Reliance-Majestic and were working on 'The Birth of a Nation' when the New York office wired, 'Finish picture at once. We will never get our money back at ten cents.' That's the difficulty of making a picture with no dough. The getting of this money is a tale in itself, but happily everyone that put faith and money in this picture were repaid many, many times over. Goldstein, a Los Angeles costumer, furnished the uniforms for an interest. Bill Clune, the theatre owner, put in S. O. S. to have first run. Actors and extras were paid, however, and this picture made most of them famous—Wally Walthour, the little colonel, Mae Marsh, Wally Reid, and many others. Of course, that isn't so unusual today, but these were a lot of little people of whom no one had ever heard. One of the difficulties was that the picture was a departure from the given path in its treatment. It ran the whole gamut of emotions—Love, Battle, Run to the Rescue; no matter what you liked in a picture it was there. And when D. W. Griffith put it there IT MOVED!

"I started writing with the Magic Carpet in mind, a carpet in the old Alexandria Hotel lobby upon which, if one had any thirty thousand dollar picture schemes, they would step away from the cheap talk at the adjoining bar and on to this carpet. It's a story in itself, how so many of these dreams they didn't believe themselves became actualities. Yet, Charlie Chaplin, mooching drinks when Lloyd Winnie Sheehan, Chuck Reisner, or anyone else would buy, already had his first \$1,000,000 film contract. The first payment was to be \$670,000, but he wouldn't go ahead until he received a wire from the Chicago bank that the dough was deposited to his account. This is just one of the true Magic Carpet tales. But to get back, up to this time, on these little schemes, much over \$30,000 never was talked of. When the fabulous earnings of 'The Birth of a

Nation' began to become known, sixty grand, eighty and ninety grand was on the line. The reason I am citing all this is because they all thought they could make a picture along similar lines and have a hit.

"Thomas Dixon, at the Ambassador Bar, once showed me his weekly check and said to me: 'I'll bet my check this week is bigger than yours.' Of course, it was. He started right in to make a picture better than 'The Birth of a Nation.' He called it 'The Fall of a Nation.' He was so sure that it would be a great success that I can remember a large sign on a conspicuous building in Times Square, New York—many, many months after the picture was forgotten. I suspect he was sure that it would have at least a year's run and had taken a long lease on the space.

"Goldstein, the then Los Angeles costumer, made a picture. Instead of the Blue and the Grey, it was Britain and the United States, something about the Boston Tea Party. J. J. McCarthy, who handled the bookings for 'The Birth' made a picture, 'The Betrayal.' They all flopped, and I'll tell you why. D. W. Griffith, after battling for dough, battling for the right to make his way; the tremendous zeal, energy and genius he put into having its timing just so, its tempo right to a hair, worked in the day and then far into the night. He is a wonderful man, this gentleman from Kentucky. I'll never forget what he said to me in the lobby of the Astor Hotel when he wanted me to quit the then Biograph Company, 'Come with me, Billy; we'll work like h..... for a few years and make a million dollars.' He made a million. I made enough. I could have made more.

"From all this you will gather that our then family, who were fattening on their tremendous profits, started at once to try and make a better picture than 'The Birth of a Nation.' Most everyone took credit for its success, theatre owners, roadshow men, publicity men—but it's the same today, you can boost a picture to the skies and they 'no come.' If it's got what it takes, lines form on the right.

"Two Chicago promoters tried to capitalize on 'The Birth of a Nation' by selling stock to certain racial groups of the nation on a production to be entitled 'The Birth of a Race,' a super-special. They had statistics of the financial success of 'The Birth of a Nation' and promised glamorous prospects for 'The Birth of a Race.' Strong arm-men went through Chicago and other mid-west cities. In about two months they had landed \$1,500,000 cash from one group. Then they thought: 'Why not sell the idea to the negro population?' They collected another \$1,000,000 from the colored folk down south and midwest. These people had no story to tell, so they took something from the Bible and decided to make the picture in Florida and use the colored folks for extras. It was made in Tampa in 1918.

"They had a special boat from New York loaded with three hundred actors. In two months the pic-

Left to right—Cameraman Bill Bitzer; D. W. Griffith, director; assistant to Bitzer.



ture was shipped to Chicago, where the producers leased the Blackstone Theatre. It lasted four weeks—long enough for all the passes to come in from stockholders throughout the country who had come to see the picture that would make them rich. Box office showed several hundred dollars cash. It has never been shown publicly anywhere since."

CINEMA TIDINGS

(Continued from Page 21)

range of choice of aperture and shutter speeds, and the tendency to try for shots under difficult lighting conditions by exposure guess-work. In the movie field, a similar tendency to jump in "where angels fear to tread" and attempt color work under a wide range of unfamiliar conditions is also cited.

Among experienced users of cameras equipped for a wide range of speeds and light conditions, the necessity for determining proper exposure independent of eye judgment is accepted as the only sure way to take full advantage of modern camera and film possibilities. Obviously, for new owners the need is even greater.

Use of a reliable exposure meter of the photo-electric type has frequently been found to restore the faith and enthusiasm of the new owner of a high-grade camera disillusioned by his inability to "guess" exposures.

DUBRAY MAY GO ABROAD

Joseph Dubray, one of the pioneer technical scientists of the motion picture industry, for many years an ace cameraman and later associated with the Bell & Howell Corporation of Chicago and Hollywood will, in the near future, Chicago advices say, be sent abroad by his firm for work in England and on the Continent, in case there is no general war there.

Mr. Dubray's work as general manager of Bell & Howell in Hollywood attracted international attention and he is regarded by the industry to be as good an executive as he has always been a photographic artist and scientist.



MAX FACTOR'S
NEW
Satin Smooth
LIQUID FOUNDATION
A REVELATION IN FACIAL MAKE-UP



The Cinematographer's Book of Tables

By FRED WESTERBERG

(Cameramen Should Add These to Their Little Red Books)

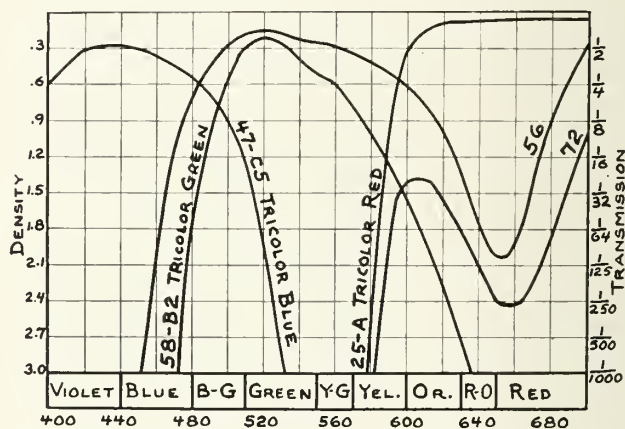
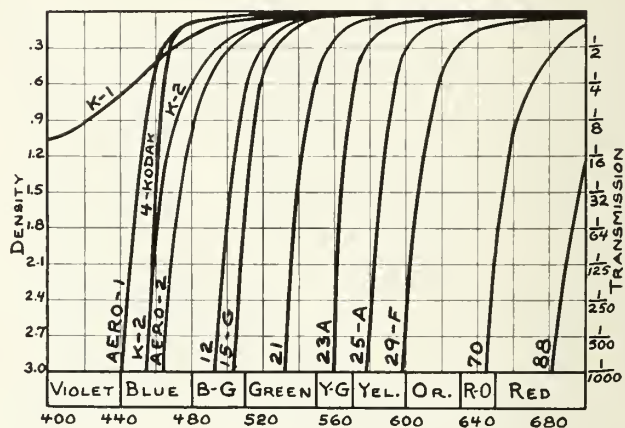
SENSITOMETRY

Density Readings Converted to Transmission

Trans- mission	Density	Trans- mission	Density	Trans- mission	Density	Trans- mission	Density	Trans- mission	Density	Trans- mission	Density
.0030	2.52	.0096	2.02	.0302	1.52	.096	1.02	.302	.52	.955	.02
.0029	2.54	.0091	2.04	.0288	1.54	.091	1.04	.288	.54	.912	.04
.0028	2.56	.0087	2.06	.0275	1.56	.087	1.06	.275	.56	.871	.06
.0026	2.58	.0083	2.08	.0263	1.58	.083	1.08	.263	.58	.832	.08
.0025	2.60	.0079	2.10	.0251	1.60	.079	1.10	.251	.60	.794	.10
.0024	2.62	.0076	2.12	.0240	1.62	.076	1.12	.240	.62	.759	.12
.0023	2.64	.0072	2.14	.0229	1.64	.072	1.14	.229	.64	.725	.14
.0022	2.66	.0069	2.16	.0219	1.66	.069	1.16	.219	.66	.692	.16
.0021	2.68	.0066	2.18	.0209	1.68	.066	1.18	.209	.68	.661	.18
.0020	2.70	.0063	2.20	.0200	1.70	.063	1.20	.200	.70	.631	.20
.0019	2.72	.0060	2.22	.0191	1.72	.060	1.22	.191	.72	.602	.22
.0018	2.74	.0058	2.24	.0182	1.74	.058	1.24	.182	.74	.575	.24
.0017	2.76	.0055	2.26	.0174	1.76	.055	1.26	.174	.76	.549	.26
.0016	2.78	.0053	2.28	.0166	1.78	.053	1.28	.166	.78	.525	.28
.0015	2.80	.0050	2.30	.0158	1.80	.050	1.30	.158	.80	.501	.30
.0014	2.82	.0048	2.32	.0151	1.82	.048	1.32	.151	.82	.478	.32
.0014	2.84	.0046	2.34	.0144	1.84	.046	1.34	.144	.84	.457	.34
.0014	2.86	.0044	2.36	.0138	1.86	.044	1.36	.138	.86	.436	.36
.0013	2.88	.0042	2.38	.0132	1.88	.042	1.38	.132	.88	.417	.38
.0013	2.90	.0040	2.40	.0126	1.90	.040	1.40	.126	.90	.398	.40
.0012	2.92	.0038	2.42	.0120	1.92	.038	1.42	.120	.92	.380	.42
.0012	2.94	.0036	2.44	.0115	1.94	.036	1.44	.115	.94	.363	.44
.0011	2.96	.0035	2.46	.0110	1.96	.035	1.46	.110	.96	.347	.46
.0010	2.98	.0033	2.48	.0105	1.98	.033	1.48	.105	.98	.331	.48
.0010	3.00	.0032	2.50	.0100	2.00	.032	1.50	.100	1.00	.316	.50

FILTER TRANSMISSION GRAPHS

Wratten Light Filters



Data by Eastman Kodak Co., Wratten Light Filters, 1936 Edition.

JUST A FEW NOTES ON CENSORSHIP

(Continued from Page 3)

film, "Around the World in Eighty Minutes," because they did not remove the section where the flight over Chicago is depicted by machine gun fire.

In October, 1936, in Detroit, there were a number of court skirmishes, rulings and counter rulings, regarding a ban on a Russian film, "The Youth of Maxim," which dealt with the 1917 revolution. The permit for the showing was finally issued by the State Supreme Court.

Chicago decided on five city film surgeons instead of four on July 15, 1932. Previously the board

had consisted of eight, and after a squall of trouble a few months before there was conjecturing that the city council would abolish the board; however, it didn't.

A bill on censorship was proposed in 1934 in Delaware that included a provision that the films in which actors who had been twice divorced were to be prohibited.

Concluded in February INTERNATIONAL PHOTOGRAPHER, in which issue some of the history of film censorship will appear.

CREATING LIGHT EFFECTS IN TECHNICOLOR

(Continued from Page 11)

a normal film, I feel that pictorialism and mood can both be served best by an uncolored use of good dramatic lighting such as we would expect in a fine black-and-white production.

The matter of mood in lighting is even more important in color than it is in black-and-white. Color is vastly more revealing, not alone of the actors, but of the cinematographer. It shows much more quickly whether or not the cameraman is thoroughly in harmony with the mood of the action. Just as some pictures permit a more extensive use of light-effects in black-and-white than do other stories, so do certain pictures, if done in color, demand a more generous use of effects than others permit. "The Garden of Allah," for example, called for lighting keyed to the mood of its action and to its richly pictorial locale. My present assignment, "A Star Is Born," on the other hand, is a swift-moving modern comedy-drama laid in a Hollywood studio setting. Extreme effect-lightings would be out of place in this picture, even as they would be were it done in black-and-white instead of color; they would in either case slow the tempo, and be out of tune with the light mood of the story. Such effect-lightings as are used in this film must be done with a very restrained touch—underplayed. For example, one sequence recently completed is laid in a sunrise court room. The room is drab. The action and characters are subdued. In a more heavily dramatic picture it would be possible to indulge in striking light-effects. In this case, the farthest I can go toward effect-lighting is to keep my lighting severe, though in-

conspicuous, with a fairly strong key-light coming through a window, to represent the rising sun. The whole scene, too, is lit in a much higher key than I would use for the same setting in a heavier drama. In color, however, there is a certain advantage in that the dull gray set, photographed in color and lit drably, gives a much stronger feeling of dull court room drabness than would be possible in monochrome.

And so I come right back to where I started: Substitute modern arcs for incandescents, and any light-effect conceivable in the best black-and-white is equally possible in color—and a great deal more effective.

ACADEMY NOMINATIONS

Ray Juné, Chairman of the Academy Technicians Branch Photographic Section, recently announced the appointment of a Committee on Cinematographic Award Nominations Rules, consisting of the following: John Arnold, Joseph August, George Crane, Edward Cronjager, Arthur Edeson, George Joseph Folsey, Jr., Fred Gage, Merritt B. Gerstad, Thomas Ingman, Ray June, E. B. McGreal, Virgil Miller, Victor Milner, Hal Mohr, Ira Morgan, J. N. Nickolaus, Karl Struss, John Swain, Joseph Valentine, Joseph Walker, Vernon Walker, and Ray Wilkinson.

This committee, which was appointed in accordance with the customary procedure under which the nomination rules for each of the Academy Technical Awards are considered each year by a committee representing each particular professional group, held its first meeting in the Academy Board Room, December 19.

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THE ASSISTANT DIRECTOR

By JOHN VAN PELT, *Actor*

IN the far reaching motion picture industry, the assistant director holds a unique position. First and generally, he is the director general's liaison officer, contacting directly or indirectly the producer, production manager, casting director, actors, technical and dialogue directors, script girl, electricians, grips, camera, sound and still men, as well as the wardrobe, make-up, design, prop, location, transportation, construction and commissary departments.

As the title denotes he, technically, is first responsible to the director from whom must come the ideas which suggest treatment of scenes, out of which emanate directions from the heads of various departments. The assistant director must see that all such ideas are carried through, leaving the director free to picturize details of a scene or move on to the new situation.

Dependent upon the size of the production unit, the assistant director must have one or more personal assistants. In any case, he works closely with the production manager.

The assistant director's routine duties are many and varied. They fall into two production divisions, that of preparing and shooting. Starting with the period of preparation which is equally important as shooting the picture, it is evident that as soon as the story department turns a picture script over to the director and his assistant, that they have early conference together to be certain they agree in concept and treatment, which is followed by conferences with other departments.

As the directors study the picture script, mental pictures of the scenes present themselves. It is imperative that these mental pictures remain vivid up to and through the shooting. Hence, only as a last resort should the intrusion of conflicting opinions from any source be permitted unless requested.

After the unit gets under production, the assistant director, besides making out his daily production report, is responsible to see that each day's working schedule of scenes to be shot, is laid out, sets completed, correctly dressed and all necessary equipment in place or available.

The assistant director checks to see that all technicians and actors have reported on time. The actors usually report to him personally. If anyone is absent, said party must be contacted at once or replaced.

In case of changes in the script's lines or business, the changes must be immediately relayed to the affected departments, be it day or night, then he must check and double-check to see that all orders are understood and carried out. Such changes he must also explain to the actors, giving time for adjustment. At times he is requested to operate a second unit of operation.

Should he know the box office value in taking

adequate stills he may become expert in directing this activity, through his appreciation of dramatic values, or next best, to insist on quiet during the still taking.

In the moments of actual shooting a scene the assistant director must be alert to catch any technical mistake or weakness of any nature, be it in diction, costume, continuity, or otherwise, especially with the supporting cast, as the director must concentrate on the principals.


Once started, "the show must go on," not because a particular audience is waiting, but because salaries go on and any slip in the day's timing and dove-tailing of all factors causes a hold-up in schedule and the cost of production goes sky rocketing. Yes, and other things can happen. It's like a traffic jam; if the rhythm and momentum is interrupted, it causes irritation and loss. The producer becomes tense and all departments are likely to react disastrously to a disrupted organization.

The baseball, or a football team, which doesn't keep its eye on the ball hasn't anything on the picture production unit when for some cause or oversight it goes beserk. People cannot create and have the jitters.

All individuals on a set must have the sustaining confidence of a reasonably smooth and underlying organization, if they are to carry through most effectively. So it is in the assistant director's capacity for detail, organization, checking and double-checking that he may earn his salary many times over.


The very nature of picture production demands mental composure even in the midst of seeming confusion. Every scene starts from scratch; every step a new circumstance, requiring poise, judgment, showmanship and creative thinking.

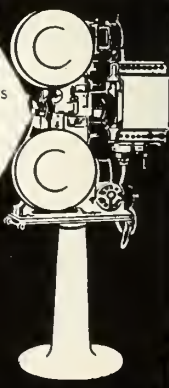
Obviously the actual correlating of the many production activities must necessarily emanate from one mind. It may be the director or the production



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manager. In any case, the assistant director must continually check, as insurance against nothing being overlooked.

Barring the intrusion of petty rivalries, final responsibility in any special matter often depends upon the extent of experience, regardless of the present position held.

The march of time causes many upsets in position and personnel. For example, sometimes the actor may be an ex-director of note, better known, perhaps, in the silent days, but now a bit player needing the money, yet who may be under the direction of his former prop boy. And so it goes, a constant challenge to one's capacity for tact, consideration and understanding, in order that personalities may submerge in deference to the picture's success.

Often on a very important matter the director calls a general "huddle" among those affected, thereby giving the picture the benefit of balanced judgment. Immediately thereafter the parties fall back into their respective places, or the assistant director sees that they do; otherwise confusion results.

To a stranger on a set it usually looks like "anybody's fight," but in reality there is a definite organization functioning. Should some matter get out of control the assistant director must step into the breach and not bother the director unnecessarily.

The assistant director must be familiar with such matters as angle of shot, lighting, perspective, dimension, make-up, costuming, continuity, dialogue, acting and characterization. In other words, he must know the picture business.

The assistant director and his assistants, who may on large pictures number up to ten or more, are sometimes required to act in group or mob scenes to lead action.

Due to his pivotal position he can either make or break a picture. In his grasp of detail and situations, both technical and creative, he must be all things to all men and that requires capacity and calibre.

The natural assumption is that good assistant directors finally become directors in their own right. That is often so; yet some men make excellent assistant directors who fail when given the director's job, as the director's responsibility and position is just as different and unique.

Each individual on a set must realize the scope of his individual authority, especially in these better days of union labor rules.

Some men get assignments and promotion by undermining, chiseling or playing politics, forgetting that those who establish reputations for fair play go the furthest.

The director must primarily be a creator; he must of necessity be objective in approach. To function best he must be rested and vital, leaving much of the detail to his assistants.

The assistant director, on the other hand, should work subjectively. And while available for creative, yet unobtrusive consultation, he knows that his further and constant value to the picture and to his directors is as **buffer**, a veritable detail depository. He is always anticipating moves to bring greater unity of action in production technique.

If there ever was a place where team work produced results in quality and economy, it is on the motion picture set—for time is money.

This brief survey will suffice to show the importance and possibilities of the assistant director's position. It is safe to say that, compared to the director or any other single important factor on the set, the assistant director does at least forty per cent of the work, receives about five per cent of the ultimate credit and usually a salary in proportion to the credit given him.

The fact that a man is an efficient assistant director is proof of his having served apprenticeship in many departments. Persevering, the picture lure has led him into one of the most important and difficult positions to fill in the industry.

With the assistant director's necessary versatility and genius for detail, the writer dares say that many a motion picture owes its success largely to his efforts.

One saving factor is that in spite of the waits, fatigue, heat and light glare discomforts, the hindrances or demoralizations due to occasional insufficient finances, too heavy schedule, salary inequalities, unfair treatment, inconsideration, snobbery, selfishness, rivalries, or would-be temperament, nevertheless, the fascination of motion pictures remains. It is the never ending pull of expectancy.

The motto: "DO IT FOR THE PICTURE" does for pictures what "THE SHOW MUST GO ON" does for the stage. These historic truisms are ingrained in the consciousness of all the old troupers, technicians, and directors alike and being contagious, newcomers are soon imbued. For behind it all, transcending the need for a livelihood is the game of it, the gamble and thrill of re-living life's adventures.

Underneath the tension and excitement of the set or the buffoonery and gossip in moments of relaxation, subconsciously, there is the ever present realization of being a part of the miracle of motion pictures and feeling the presence of that vast future audience. It is as though the spirit world's million eyes were focused in one camera eye—watching, which challenges, motivates and inspires.

(Knowing how motion picture directors rely upon their assistants and the high regard in which they are held has added to a growing conviction and realization that the unheralded assistant director as well as all assistants in each department of motion picture production, form the background—the mechanics which make possible the final product, a product contributing to human betterment everywhere.—Editor's Note.)

PERSPECTIVE

Instalment No. IV, by Lewis W. Physioc will not be continued until February issue of International Photographer when a resume of the entire subject together with added essentials will be taken up. This series of technical knowledge on this subject has attracted great attention.

MOTION PICTURE SOUND RECORDING

(Continued from Page 9)

1. Similar to Western Electric System.
 - a. Difference in output circuits.
- C. Photophone amplifying equipment.
 1. Physical arrangement of the equipment.
 - a. Built into cases instead of racks.
 2. The direct amplifier.
 3. The monitoring amplifying equipment.
 - a. Headphone monitoring.
 4. Auxiliary equipment.
 5. Maintenance of the amplifying equipment.
 6. The battery supply.
 - a. Battery installation employed.
 - b. The charging system.
 - c. Switching arrangement.
- IX. Film recording.
 - A. Western Electric System.
 1. The film recording machine.
 2. The light valve.
 - a. Stringing and tuning the light valve.
 - (1) The light valve tuning panel.
 - b. Making the overload test.
 - (1) The overload testing equipment.
 - (a) Theory of the Wein bridge.
 - c. Sound record produced.
 3. Associated equipment.
 4. Maintenance and setting up of recording equipment.
 - a. The stroboscope test.
 5. Film handling.
 - a. Care of the film.
 - b. Recording sound "takes."
 6. Film employed.
 - a. Type of emulsion used.
 - b. Chemical changes that take place.
 - (1) "Grain" in film.
 - B. The RCA Photophone.
 1. The film recording machine.
 2. The RCA "rocking mirror."
 - a. Adjusting the rocking mirror.
 - b. Type of sound record produced.
 3. Associated equipment.
 4. Maintenance and setting up of recording equipment.
 - C. The Fox Movietone.
 1. The recording machine.
 2. The Aeolight.
 - a. Current control for the Aeolight.
 - b. Sound record like that of the Western Electric equipment.
 3. Associated equipment.
 4. Maintenance and setting up of recording equipment.
- X. Noise-reduction equipment.
 - A. Western Electric System.
 1. Theory of its functioning.
 - a. Sound track produced.
 2. The noise-reduction amplifier.
 3. The noise-reduction control panel.
 4. Adjustment and maintenance.
 - B. Photophone System.
 1. Theory of its functioning.
 - a. Sound track produced.
 2. The noise-reduction amplifier.
 3. The movable vane.
 4. Adjustment and operation.
- XI. Wax recording (used only by Western Electric System).
 - A. The wax recording machine.
 - B. The wax recorder for the lateral cut method.
 1. The recorder control panel.
 - C. Associated equipment.
 - D. Setting up the recording apparatus.
 1. The trial cut.
 2. The spiral.
 3. Electrical level adjustment.
 - a. Cut overs.
 4. Stroboscope test for speed.
 - E. Maintenance of the recording apparatus.
 - F. The wax recorder for the hill-and-dale method.
 1. The trial cut.
 2. The spiral.
 3. Electrical level adjustment.
 4. Advantages.
 - G. Wax record shaving.
 1. The rough blanks.
 - a. Chemical composition.
2. The wax shaving machine.
 - a. The cutting tools.
 - (1) The rough cut.
 - (2) The fine cut.
3. Dimensions of the finished record.
- H. Wax storage.
 1. Wax storage cabinets.
 2. Temperature control.
- I. Record handling.
 1. Handling before recording.
 2. Handling after recording.
 - a. Record protection cases.
 3. The written record of "takes."
- J. Making "play-backs."
 1. The play-back reproducer.
 2. Play-back patching.
 3. Play-back horns.
 4. When and why made.
- XII. The motor control system.
 - A. The necessity for absolute synchronism between motors.
 - B. The Western Electric motor control system.
 1. The Selsyn motors.
 - a. Theory of operation.
 2. The motor control box.
 - a. The motor-generator-alternator.
 - b. The fixed frequency and speed.
 - (1) The phase-shift control.
 3. The motor control switchboards.
 - a. The relays.
 4. The off-synchronism switch for the wax record trial cut.
 - C. Synchronous control used by other records systems.
 1. Theory of the synchronous motor.
 2. Effect on released pictures.
 - D. Maintenance of the motor control system.
- XIII. The intercommunicating system.
 - A. The colored signal lights.
 1. Where installed.
 2. How operated.
 3. The system of signals.
 - B. The intercommunicating telephones.
 1. Construction and connection.
 2. Operation.
 3. The departmental call signals.
- XIV. Special recording processes.
 - A. Re-recording, or dubbing.
 1. Meanings of terms.
 2. The necessity for re-recording.
 - a. To adjust level of sound record.
 - b. To "mix" several sound tracks.
 - c. To transfer sound records from film to wax.
 - d. To transfer sound records from wax to film.
 - e. To add music or sound effects to a completed picture.
 3. The dubbing machines.
 - a. Western Electric dubbing machines.
 - (1) Original type.
 - (2) Improved type.
 - b. RCA Photophone dubbing machines.
 4. The film rewinding reels.
 - a. Patching film.
 - b. "Blooping" patched film.
 - c. Use of a loop.
 5. The picture projection machine.
 - a. Its operation.
 - (1) Threading.
 6. The dubbing monitor room.
 - a. The monitoring equipment.
 - b. The transparent picture screen for sound effects.
 7. The technique of dubbing, or "duping."
 - B. Orchestrations.
 1. Pre-scoring.
 2. Post-scoring.
 3. Need for both methods.
 - C. Sound effects.
 1. The production of sound effects.
 2. Sound cartoons.
 3. Adding sound effects to silent shots.
 - a. Reasons for not recording sound with picture.
- XV. The circuit laboratory.
 - A. Need for the circuit laboratory.
 - B. Equipment of the laboratory.

1. The audio-frequency oscillator.
 - a. Fixed oscillator type.
 - b. Beat-oscillator type.
 2. Attenuation measuring panel.
 3. Volume indicator.
 4. Condenser transmitter amplifier test panel.
 5. Impedance-matching panel.
 6. Light valve tuning panel.
 7. Light wave overload equipment.
 8. Tube checker.
 9. The "megger."
 10. Microphone test box.
 11. Tools required; portable universal meter; and headphones.
- C. Routine tests.
1. Light valves.
 - a. Tuning.
 - b. Overload.
 2. Amplifiers.
 - a. Gain-frequency runs.
 - b. Overload point.
 - c. Vacuum tube condition check.
 3. Circuits.
 - a. Continuity.
 - b. Resistance to ground.
 - c. Cross-talk.
 - d. Electrical level at different points.
 4. Microphones.
 - a. Amplifier gain-frequency run.
 - b. Use of microphone test box.
 5. Noise-reduction equipment.
 - a. Gain-frequency run.
 - b. Overload point.
 - c. Bias setting.
 6. Grid-bias and microphone battery voltage tests.
- D. Special tests.
- XVI. Communication circuit theory.
- A. Elementary theory.
1. Resistance.
 2. Inductance.
 3. Capacity.
 4. Reactance, impedance, and phase angles.
 5. Impedance matching.
 6. Reflection losses.
 7. Transmission line theory.
- B. Attenuation network theory.
1. T-type attenuators.
 2. H-type attenuators.
 3. Voltage-dividing potentiometers.
 4. Design of a practical attenuation measuring panel.
- C. Electric wave filters.
1. Low-pass type.
 2. High-pass type.
 3. Band-pass type.
 4. Band-elimination type.
- XVII. Record finishing.
- A. Film sound records.
1. Developing.
 2. Printing.
 3. Sensitometry.
 - 1) Hurter-Driffields' work.
 - (1) Gamma.
- B. Wax sound records.
1. Processing.
 - a. Electro-plating.
 - b. Stamping.
 2. The finished record.
- XVIII. The portable sound truck (Western Electric System).
- A. The truck used.
- B. The recording equipment.
1. The monitoring apparatus.
 2. The amplifying equipment.
 3. The film recorder.
- C. The gasoline-engine driven power supply.
- D. The storage batteries.
- E. The light valve tuning panel.
- XIX. The trunk-type portable recording equalment (Western Electric System).
- A. The division into units.
- B. The recording equipment.
1. The monitoring apparatus.
 2. The amplifying equipment.
 3. The film recorder.
- The special light valve used.
- C. The power supply.
- XX. Outdoor recording.
- A. Different monitoring technique required.
- B. Difficulties encountered.
1. Handling sound over a large area.
 2. Excluding extraneous sounds.
 3. Transportation of sound equipment difficult in many localities.
 4. Protecting the sound equipment.
 5. Guarding microphones from dampness.

Chinese Producers Making Great Progress

By JOHN J. PASZTOR

Cathay Cinema Co., Shanghai, China

(Mr. Pasztor has just returned to China after a sojourn in Hollywood and Los Angeles on an equipment trip—U. S. producers are welcome in China.—Editor's Note.)



REAT progress has been made by producers to elevate the "infant" film production in the Land of the Lotus Flower. Scarcely more than ten years old, it has been only during the past four or five years that any appreciable progress has been made toward improving the technical and artistic branch of the industry. Handicapped by seemingly insurmountable difficulties such as desirable equipment, studios, talent, directors and many varied dialects and the like, the pioneers have forged ahead and today they well may be proud of their accomplishments.

The average feature film is from 10 to 12 reels, a full two-hour show, and each film contains about 80 per cent exteriors to cut down production costs. When one considers our budgets it will be noted why. The cost of a regular production feature runs in the neighborhood of \$10,000 to \$15,000 (Mex.) or about \$4,000 in American money. Super epics cost, with many "extras," about \$5,000. The colossal epic has not arrived in China, but it won't be long now. Departmental specialization is not a practice in China. The director and cameraman virtually

make the picture. The director often writes his own story, looks after locations, make-up, sets, directs, and in the end cuts the picture, and the cameraman goes along to help. The cameraman in China does his own assisting, loading, shooting, lighting and often assists in directing and developing the negative.

Comedies, action, and ancient folk lore stories are most popular. Of late pictures depicting the military and national patriotism seem to be the vogue. Films of parental filiality are ever popular, as the FAMILY is still the recognized institution in China. Love, triangle, banditry and films showing the Chinese Nation and its people in an undesirable light are taboo.

In America, Mr. Yi-Seng S. Kiang, the Vice-Consul for the Republic of China, at Los Angeles, has done commendable work in bringing about a mutual understanding and cooperation among producers in eliminating objectionable material from stories of and about China.

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(Turn to Page 30)

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HOLLYWOOD STUDIOS USE THEM IN EVERY PRODUCTION

CHINESE PRODUCERS MAKING GREAT PROGRESS

(Continued from Page 29)

323 theatres of all classes exhibiting films. Of this number about 75 per cent are wired for sound. American pictures are most in favor, British, German, Italian and Russian, in the order named. In order to encourage and protect the native producers, all theatres in China, as of July 1, 1936, must show 60 per cent Chinese product each month. In Shanghai there are the Star Motion Picture Company, United Photoplays, Jansen Films, Cathay Cinema Company and the Unique Film Company. In Hong-kong and Kowloon the Grandview Film Company is the only active producer, with one or two independents shooting now and then.

Mr. Lo Ming Yau, of the United, is the dean of Chinese producers, with Mr. William Jansen and Mr. Joseph S. Sunn (of Grandview) close second runners-up. Miss Butterfly Wu is the recognized star in the Shanghai area, and Miss Wu Dip Ying in the South. No films are produced in North China at present, although several more or less successful attempts have been made in the past year. The Cantonese dialect is used in the south of China and Mandarin in Central China.

Before a production can be started, a completed script must be submitted to the National Government Censor Board at Nanking. After a long wait, sometimes weeks, and if the script is approved, there is no assurance that the finished product will be accepted. Censorship is one of the bugaboos of the business that will soon be straightened out by government officials.

In conclusion, I wish to say that anyone contemplating the production of films in China will find a cordial welcome and will receive complete cooperation from the Chinese Nationalist Government staff provided all rules and regulations as laid down by the motion picture act of 1931 are obeyed and adhered to. The facilities of local producers are at their disposal at all times. By all means pay a visit to China.

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First International Exhibition of Applied and Scientific Photography in U. S.

Under the chairmanship of Gustave Fassin, of the Bausch & Lomb Scientific Bureau, Rochester, New York, a committee has been appointed to secure and arrange exhibits for the first International Exhibition of Applied and Scientific Photography ever held in the United States.

According to plans revealed by Mr. Fassin and Rowland S. Potter, national chairman of the Scientific and Technical Section of the Photographic Society of America and president of the local section of the Society, which is sponsoring the exhibition, it will be held in the Rundell Memorial Building at Rochester, New York, in March, 1937. This new and beautiful civic building has exceptional facilities for showing both pictures and apparatus.

Scientists all over the world are being contacted in an endeavor to make the exhibition fully representative of the many fields of applied and scientific photography.

Scientists in any of the following fields are invited to send exhibits to the heads of the sections listed below, or to C. B. Neblette, Secretary of the Scientific Section at Rochester, who will supply entry blanks:

Dr. Walter Clark, astronomy, meteorology, light sensitive substances; Mr. Gustave Fassin, photomicrography, micro-photography, metallography; Dr. Brian O'Brian and Dr. Walter Clark, X-ray spectrography; Dr. T. R. Wilkins, cosmic ray photography and theoretical physics; Mr. C. B. Neblette, press photography; Mr. Glenn Matthews, high speed photography; Mr. Rowland S. Potter and Mr. John W. McFarlane, technique of color photography; Mr. John W. McFarlane, photography by invisible radiation; Mr. Glenn Matthews, aerial photography; Secretary, C. B. Neblette, F.R.P.S. Rochester Athenaeum and Mechanics Institute, Rochester, New York.

"Value of Movies and Talkies in Education"

Movies Preferred Over Teacher Demonstration and Laboratory Work!

Mr. A. P. Hollis, Educational Director of Herman A. DeVry, Inc., comes to the editor's desk this month with an invaluable little booklet entitled, "Values of Movies and Talkies in Education," which should be on the desk of every teacher in cine-

matography as applied to visual aids in education.

The experiments cited are widely dispersed and clearly set forth and were assembled in response to inquiries of teachers most interested, to whom copies will be sent free.

The following named teacher dared to risk his personality against "movies."

Professor Arthur H. Bryan, Science Department, Baltimore City College, conducted a novel study.

"In order to find out just how high school academic, scientific, technical, and blind students reacted to various methods of instruction, . . . eight methods . . . were put on the blackboard and explained. The teacher turned his back on the class and asked for a show of hands on the choice of the various methods of instruction used, which were charted, counted and tabulated by a disinterested observer. Within the last three years, between four and five hundred students have participated in the questionnaire. The graphs show that student interests most certainly lean toward visual methods. Educational biological movies together with field-trips vied for the honors of first students' choice. Laboratory work and stereopticon lectures took third and fourth places respectively. The purely non-visual methods of instruction were unpopular, hardly any student chose them.

Chart II.

Choice of Method by 164 Technical Students

0% Lecture	12% Laboratory Work
0% Social Recitation	19% Field Trip
1% Formal Recitation	27% Illustrated Lecture
2% Teacher Demonstration	40% Movies

(From article in Educational Screen for October, '36.)

Chart I showed that academic students preferred movie instruction by 35%—in a class of blind students, 46% prefer "talkies."

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Hollywood Off Stage

By EARL THEISEN

Associate Editor International Photographer

Part III

The R. K. O. prop. department had to equip a cottage for the film "Coast Patrol." It was a rush job and they had to pull out of their sleeves such things as a pair of ivory tusks, a polar bear rug, six pictures of early American schooners, nautical books, Indian and Eskimo bric-a-brac, inlaid and hand-carved cigarette boxes, assorted pottery and a banjo barometer.

At Warner Brothers prop. departments set on truck trailers are hauled into the sound stage. A number of these trucks have been built and equipped with a similar outlay of baby pins, violins, fire axes, dolls, pictures, monkey wrenches and other conglomerations.

Erik Rhoades has a pet dog that likes to ride a taxi-cab. The dog, Hulda, wanders away and finds a cab. Then she puts her feet on the running-board to attract the attention of the driver. He takes her to the address on the collar, which is home. Erik Rhoades says that if he doesn't break the dog she will break him.

There is a new kind of fan. Down at Metro-Goldwyn-Mayer a stranger carrying a suitcase followed a number of the stars. After following Myrna Loy three times, he was stopped to find out what it was all about. He was collecting phonographic records of the star's footsteps.

Believe it or not, Robert Ripley only recently visited a movie lot for the first time. He went to visit Pete Smith and talk about a contract for a series of short subjects.

Two "grips" were given special jobs on the "Maytime" set. In one scene Jeanette MacDonald was required to run around a bend after saying: "Good-bye." The bend was at the end of the set and to keep the star from tumbling off the set, the "grips" were stationed at the turn to catch her as she ran into their arms. Happy "grips"!

A new racket has been discovered. A man dressed as Charlie Chaplin goes up to a door and, after getting the housewife to the door, does an act and gives her a sales talk on buying Christmas cards. The Charlie Chaplin imitator said he got the idea from another fellow who was doing an imitation of William Powell.

In the picture "Camille" Greta Garbo weighs ten pounds more due to five petticoats and other yardage required for the "Camille" costumes. Each costume requires about one hundred yards, or enough to clothe thirty modern women.

The hundreds of bewhiskered extras in M.G.M.'s "Parnell" set present a fire hazard. At an early day when men wore whiskers they did not smoke

cigarettes; now, cigarettes, whiskers and movie settings are giving the firemen some uneasy moments.

Olivia de Havilland has asked some of her closest friends in her home town, Saratoga, California, to "tip her off" if they notice from that distance that she is going high hat.

George Brent insured several of his paintings against destruction by termites. The paintings are murals on the walls of his Encino ranch house.

How some of the directors get the best from the actors:

Mervyn LeRoy asks: "Let's have a nice scene, now."

Archie Mayo says: "Come on now, give it that international zip."

Bob Connolly: "Let's get some style into this."

Pat O'Brien calls his bar room the "rumpus" room.

Frances Langford was caught by fans when she was leaving a Los Angeles theatre. The fans insisted that she sing and she sang before they would let her go.

Joseph Coscia, Columbia Studios doorman, painted a left-handed portrait of Jane Wyatt. He lost his right arm in a factory accident a few years ago and has now learned to paint with his left hand.

Because all the roads in California are in rather good condition, Warner Brothers had to construct a dirt road in poor condition for a scene in "Romance of Robert Burns."

It takes three days for a joke to blanket the United States. This is the estimate of Groucho Marx.

"No painted fingernails" is the order given all girls working in "Maytime." The action of the story takes place in 1865 and the women of that time did not paint their nails. A make-up girl stands by to remove all nail paint.

A movie chair of the kind that is used in rough-house scenes costs fifty dollars. Such chairs are made of balsa wood which is very light and breakable. For one scene in the Twentieth Century-Fox, "The Holy Terror," \$1000 was spent for tables and chairs that were broken in a few minutes before the camera.

It now develops that trees use make-up. In the film, "Nancy Steele Is Missing," four live oaks had to be daubed with a washable paint to artificially age them.

Should Robert Taylor comply with all the requests heaped on him for souvenirs he would have to join a nudist colony. The fans ask for the suits he has worn in films. Sixty-three fans requested the same suit worn in the film "His Brother's Wife," and forty-four requests came for the shoes. Sixteen persons wanted the shoes autographed. Three one-legged men each asked for a shoe. He would be bald if he sent all the hairlocks that were requested. Taylor now receives over 8,000 letters a week.

CARRYING LIGHT TO THE DESERT

To bring artificial lighting onto a desert location may seem like "carrying coals to Newcastle"—yet that is what was done in filming the "Garden of Allah." With the brilliant sunlight of the desert flooding the scenes, carbon arcs were used to "boost" the light intensity at the center of interest and action.

Only the carbon arc is capable of producing light of greater brilliancy than daylight on the desert.

Some of the powerful carbon arc lamps which were used in the filming of these desert scenes are shown in this behind-the-scenes shot of one of the huge oases constructed for this magnificent production.



Behind the scenes during the filming of Selznick International's all Technicolor production, "The Garden of Allah," from the Robert Hichens play and book. Co-starring Marlene Dietrich and Charles Boyer. David O. Selznick, Producer; Richard Boleslawski, Director; Howard Greene, Photographer; Hal Rosson, Photog. Advisor; W. A. Oetzel, Studio Chief Electrician

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HOLLYWOOD

TH YEAR

FEBRUARY, 1937

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Supervisor, Sam Bischoff; director, Ray Enright; unit manager, Gordon Hollingshead; assistant director, Lee Katz; second assistant, Jesse Hibbs; script clerk, Wandra Sybald; director of photography, Sol Polito; second cameraman, Al Green; assistant cameraman, Frank Evans; stillman, John Ellis; prop man, Lou Hatley; gaffer, Frank Flanagan; grip, Harold Noyes; mixer, Dolph Thomas; ward man, Charlie Mack; ward woman, Katherine Grams; hair dresser, Helen Turpin; cutter, Doug Goldberg; art director, Carl Weyl. Cast: Ruby Keeler, Ross Alexander, Lee Dixon, Allen Jenkins, Louise Fazenda, Carol Hughes, Winifred Shaw, Addison Richards, Jane Wyman, Teddy Hart.

BERT LONGWORTH

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INTERNATIONAL PHOTOGRAPHER

MOTION PICTURE ARTS AND CRAFTS

Vol. 9

HOLLYWOOD, FEBRUARY, 1937

No. 1

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CONTENTS

Front Cover by BERT LONGWORTH

Frontispiece by S. C. MANATT

STANDARDIZING EXPOSURES IN THE CAMERA - - - 3
By P. C. Smethurst, England

INDEX OF AMERICAN DESIGN - - - 4
By Warren S. Lemmon

PHOTOGRAPHY—BACKWARDS OR FORWARDS? - - - 6
By Karl A. Barleben, Jr., F.R.P.S.

MOTION PICTURE SOUND RECORDING, Chapter 30 - - 8 & 9
By Charles Felstead, Associate Editor

"DEATH IN PARADISE CANYON" - - - 10

PERSPECTIVE—INSTALLMENT 4 - - - 12
By Lewis W. Physioc

COLORFUL CAREER OF THE NEWSREEL MAN - - - 14
By Herbert Aller

GOD'S GIFT OF COLOR SENSE TO THE WORLD - - - 16 & 17
By Paul Perry

AMATEUR MOVIE SECTION:

Edited by F. Hamilton Riddel

Photofood for Cine Lighting - - - 18

Book Reviews - - - 19

Cine Tidings - - - 20 & 21

Right Off the Reel - - - 22

Questions and Answers - - - 23

CINEMATOGRAPHER'S BOOK OF TABLES - - - 24
By Fred Westerberg

SUB-COMMITTEE ON THE STANDARDIZATION OF SYN-
CHRONIZING SYSTEMS FOR CAMERAS - - - 26, 27 28
Technical Bulletin—Academy of Motion Picture Arts & Sciences

MY THIRD WITH THE DEBRIE - - - 29
By Edward C. Collins

CLASSIFIED ADVERTISING - - - 30

AN INTRODUCTION TO PHOTOGRAPHY FOR TELEVISION - 31
By Harry R. Lubcke

A FEW NOTES ON CENSORSHIP—Part II - - - 32
By Earl Theisen, Associate Editor

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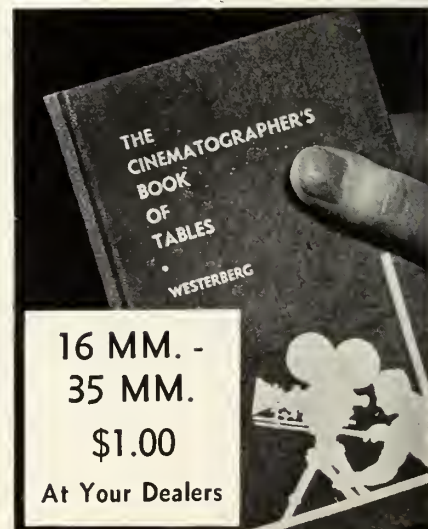
HOLLYWOOD

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Standardized Exposures in the Camera



ALMOST exactly two years ago the writer was asked by a film manufacturing company to examine the question of exposures on reversal (amateur type) film stock, and to formulate—so far as this proved possible—some simple method whereby this somewhat intractable material could be accurately exposed in the camera if the stock were given standardized "time and temperature" processing. Though some preliminary notes on this problem were published in the *INTERNATIONAL PHOTOGRAPHER*, the complete working out of a foolproof system for amateur use was by no means a simple task, and it is only in the last four months that a really practical position has been reached.

In considering the problem, it was found necessary to consider the film as a whole, instead of as negative-positive and reversal stocks, with the result that the present treatment applies equally to negative stock given a standard printing exposure, to color processes, and to monochrome reversal film. The present position is that it is possible without the least difficulty to expose in daylight or artificial light on the same film strip and to treat it by standard methods after camera exposure and reach standard screen quality. Special night (and other) effects can quite simply be produced by calculation from a pre-determined tone reproduction curve for the negative and positive, or reversal, stock used in the camera.

As soon as the theoretical position was satisfactorily worked out, arrangements were made for the co-operation of a British film studio for a short test under ordinary conditions, and a single exposure was made under studio conditions to determine the zero setting of the measuring instrument. A test was then made in another camera with another lens, on a small set which had not been broken down, the same film stock (Kodak Super-X) being provided by the authorities. No tone reproduction curve was available, so that the writer had to base calculations on the positive characteristic curve of the positive stock used. Eight shots were then exposed by the writer and his associate under lighting conditions such that the correct aperture remained $f/2$ (Speed Panchro lens, Vinten camera, and 170 degree shutter opening) for all of them. The lighting was varied as much as possible and was different in each shot. A final shot was lit by the professional cameraman in charge of the unit, and he was asked how he required it to be matched with the other light. On specifying that the accent side of the face in his shot was to be matched with the shadow side of the face in the one preceding, the necessary calculation was made and the shot exposed. The negative was handed over to the laboratory, and the writer and his associate then retired to the canteen to write out precisely the effect which would be found in each shot. They did not see the negative at all, and only saw the positive after processing, when it was projected as a rush.

The results were very satisfactory, each shot being just as was specified on the list (the professional cameraman was so disbelieving that he insisted on examining the negative himself to make sure that the printing exposure had not been juggled with).

BY
P. C.
SMETHURST-
ENGLAND



As a consequence, a full-scale test on an actual production is being arranged in the near future.

As regards the question of color, the position taken by the writer in formulating a theoretical basis was that colors that remain the same on the set should remain the same in different shots of one film. No account is taken of the process used, and no attempt is made to give a completely truthful color reproduction, since this is the business of the color-process people and not of the studio cameraman. Up to the present, it has not been possible to make extensive tests on 35 mm. film, but extremely satisfactory results have been obtained on Kodachrome and Dufaycolor 16 mm. reversal film, and a great many experimental exposures on Dufaycolor roll-film have given excellent transparencies. In all cases standardized processing was given to the experimental exposures.

Some distrust of a scientific and mechanical method for obtaining correct exposure has been shown by cameramen in England, and this is most unfortunate. No process of this type can ever supplement the cameraman, since it is his business to light the set and players as his artistic instinct tells him will be most effective. But in view of the fact that the writer finds that cameramen light their sets extremely irregularly, so that a great deal of time and trouble have to be spent in the laboratory on matching the print to correct density, it is clear that any simple method whereby the proper exposure for a definite effect and purpose can be immediately found out and given will not only tend to improve the value of the cameraman in the eyes of his employers but also to lighten his work very greatly. Only the cameraman and director have a real conception of the effect wanted, and if they can get these effects in the camera and leave the laboratory to carry out a standard process it seems more than likely that everyone will be more pleased as a consequence.

The question is naturally whether a system of this type can be satisfactorily applied to actual studio production, and information on this point should be available within the next three months. Until then, the present notes may be of interest as a pointer to the possibilities, though it must be emphasized that an understanding of technical matters is an essential if such a scheme is to be carried out in practice. This difficulty will probably be less in Hollywood than in England, where few people seem to have heard of Gamma, still less understand what it means.

Index of American Design

(A Federal Art Project)

By WARREN W. LEMMON

[The International Photographer is particularly pleased to present this article by Mr. Lemmon, not only because of its timeliness as one of the United States Government's art activities, but because of the selection of our own Mr. Paul Park, as official photographer. It requires a special talent to successfully represent this sort of restorative art. Mr. Park is a member of Local 659.—Editor's Note.]



Main Doorway, San Fernando Mission (showing original wall decoration uncovered under whitewash). Circa 1812. Photographed by Paul Park.

We all remember the family parlor of grandmother's day with its horsehair furniture, rosewood whatnots, marquetry table and a few treasured heirlooms of previous generations. In fact, that pre-apartment age had its attic and basement which in most cases functioned both as store-room and private museum. That day being past, we have no desire to go back to the hitching-post or daguerrotype

but it still remains our duty not to allow these objects to pass unnoticed.

The Index of American Design has taken this responsibility and will consist of portfolios of drawings, water colors and photographs of Early American furniture, pottery, silver, costumes, glass, textiles and other craft work, the subjects being selected from the finest pieces in museums and private collections throughout the country. This will be a valuable supplement to official archives and literary accounts.

In presenting an outline of the activities and purposes of the Index of American Design, it is our desire to share this exciting work with all and especially with those fraternities interested in the visual arts.

This phase of government documentation enters the very life of the individual since we are engaged in recording our historic past, that is, of the decorative arts in this country, from its earliest beginnings until 1890.

Our Government has recognized the importance of such a record to provide this material for schools, libraries, universities and industry in a form convenient for study. At present, such institutions have at their disposal mainly the exhaustive tomes of foreign designs which have been compiled and presented as evidence of cultural progress during the development of these countries. Certain inventories of this nature in Europe have been carried on for the past thirty years and are not yet finished.

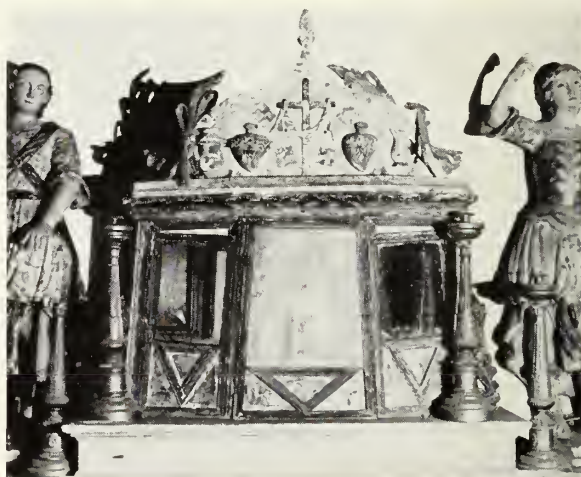
The question naturally arises, how long will this task take for completion? There is no intention of committing the Federal Government to a thirty-year program, however useful or valuable it may be. Our present purpose is to map out a ground-plan for the Index, planning to complete certain sections of it now and to handle it in its entirety only when

possible to do so in a thorough and scientific manner.

As its aim and scope is ambitious, the organization of each unit of the Index of American Design has been carefully developed. A staff of research workers selects, with the aid of experts, objects to be drawn or photographed and supplies the data concerning period, maker, materials and dimensions necessary for descriptive captions. Trained artists of the Federal Art Project, under specialists in their various lines, are rendering Index plates in several mediums such as pencil, pen and ink, transparent and opaque water color. This work is coordinated in Washington, so that all plates, regardless of medium, will have a unity in the completed portfolios.

Photography plays a major part in this work and is handled in a careful and scientific manner, as required by the various textures and forms, thus testing the ingenuity and skill of the photographer. In dealing with the various textures, such as old woods, faded textiles, or designs which have been revealed by scraping plaster from old walls, etc., filtration has solved many a problem in representing the contrast of delicate tones. Retouchers are assigned to aid the photographer in such work as opaquing, to eliminate background immaterial to our studies.

A practical example of collaboration between photographer and artist occurred recently in Southern California in the reproduction of a series of easel paintings which are now at San Gabriel Mission. These paintings evidently were done by Indian neophytes under the direction of the Mission fathers and show the compromise between the Spanish and Indian cultures in this form of art. Hand-colored photographic enlargements of the Stations



Original Tabernacle, Santa Barbara Mission; made about 1820 by Indian neophytes. Photographed by Paul Park.

will be preserved as a record, the originals being in a state of decay.

In each section of the country, concentration is chiefly on what is characteristic of and local to that section, but nothing that is American and important is omitted. For example, Massachusetts is concentrating on textiles and compiling a record of the

objects of daily use in the fast-disappearing Shaker communities. In Louisiana an exhaustive study is being made of wrought and cast iron in New Orleans.

In Southern California the Spanish-Colonial period is naturally the greatest contribution to the Index and is being thoroughly covered. Material is obtained from collections in the Missions, museums, historic houses and private homes. However, with the emigrating population, new residents have brought with them family heirlooms and objects of interesting design from their original dwellings in other parts of the country. This material is outstanding, as it exists in isolation from its other surroundings, providing in almost every home a museum-piece which should be preserved in the Index before unappreciative persons cause its destruction and loss forever.

Hobbies of individuals often help our research workers in furnishing varied and interesting material. The Camarillo assemblage of silver-mounted bits, spurs and other Spanish-Californian horse trappings is a real contribution to the silversmith's art from this area, while the dolls of the Ripley collection show us the toys and costumes of our American ancestors. Cast-iron picture-frames and ornamental hangers are part of the offering of a Los Angeles man, originally in the foundry business in the East. He is also responsible for many of the hitching-posts which once lined our streets.

These hitching-posts, now being rapidly replaced by fire-plugs and "No Parking" signs, have the interest of a Santa Barbara woman who has listed those remaining in that section. In a recent survey of the "props" at Warner Brothers Studios, two cast-iron Blackamoors were found, a form of hitching-post which is rare today.

In passing, it may be said that the Warner Studios can justly be proud of the vast collection and orderly arrangement in their "Props" Department. However, the relatively small number of Early American objects there shows a definite need for such a file as the Index of American Design is compiling.

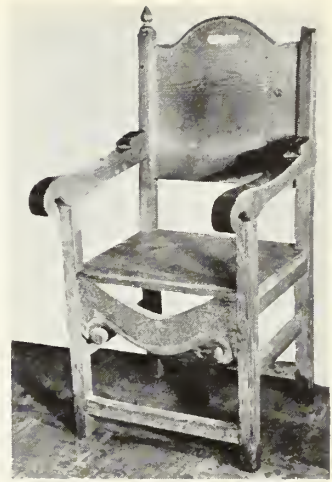
A reference file is being established for each locality in which the Index operates and the last of items to be drawn and photographed grows each day as this work becomes better known. The regional Index offices will list your personal objects of Early American origin, and when artists and photographers are available, will undertake properly to record them. This will not only increase appreciation but in many cases will enhance the intrinsic worth of the item because of its being authentically recorded in the government archives.

Although there are many books on "Early American" folk arts, some of which are very good, there is no single collection comparable with the great European compilations of decorative design, which are a source of information and inspiration to students and artists the world over. The need is most obvious to us who are close to the work, who have tried to get from books a consecutive idea of the growth and development of the decorative arts of our own country.

Some Index plates are exhibited locally before being sent to Washington and the public is invited to see this material. Local newspapers announce the galleries and dates.

In preserving this material as a vast research file, selections for the final portfolios will be made for final publication by recognized experts in various fields. These portfolios will be mainly graphic,

Chair—Santa Barbara Mission. Made by Indian neophytes about 1820. Photographed by Paul Park.



the text being confined to such data concerning date, place of making, maker, material and size as is needed to make the portfolio useful.

While checking the facts concerning each piece rendered, competent research workers are compiling background material. Some of this background material is not only useful in our work but to the public at large. We are making, for example, exhaustive lists of draftsmen who worked in the United States. Partial lists have been published in scattered places. These we are assembling and completing from original sources, as a help in checking makers' names and dates on the pieces chosen for the Index. Also, a complete bibliography of American Design is being compiled, which will soon be published by the Chairman of the Graduate School of Fine Arts of New York University and which will consist of main works in each field with critical commentary.

Although Index work was started in Southern California less than a year ago, the sincere interest shown by the participants has brought the standard of production very high. Special commendation has been received by individual artists and by Mr. Paul Park, who is in charge of the photographic work in this region.

The Index office has received the cooperation of individuals, museums, the motion picture industry, public and private libraries, as well as those in charge of the old Missions and our State University, all having proven willing friends who see the need of an authentic file of American decorative art. In addition, we are anxious to have the professional groups know the purposes of our work, that they may follow some of our interesting experiences and problems which are in their line.

The Index in Southern California operates from three locations: Santa Barbara and San Diego, with headquarters in Los Angeles. As a part of the Federal Art Project, this study of American Design has the active and interested leadership of Mr. Nelson H. Partridge, Jr., State Director.



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Photography – Backwards or Forwards

By KARL A. BARLEBEN, JR., F.R.P.S.

Dean, New York Institute of Photography

THE urge to write in an editorial vein causes me to believe that I am getting old. Maybe so, but it appears to me that things are happening in photography, amateur photography particularly, which are somewhat strange. I wonder how they impress you.

For instance, only recently I was asked by a certain manufacturer to prepare a rather exhaustive treatise for a book on a vital factor in photography; a factor which has been most successfully eliminated by means of a certain accessory. I turned the offer down because, in my humble opinion, the presenting of such a book to the public would defeat the very purpose of the accessory involved! In short, I felt at this stage of the game it would be rather foolish to elaborate upon a mighty variable problem in photography and thus confuse beginners all the more . . . there are enough confusing factors in photography as it is to worry about without adding to the burden . . . especially when by means of a simple gadget, this certain problem is immediately and accurately solved.

During the past few years I have felt that photography has been slipping away from its intended purpose . . . that of amusement and pleasure . . . and into a matter of tremendous technical difficulties. Perhaps George Eastman had the right idea at that . . . "Press the button and we do the rest." This was a pretty raw deal to those of us who wanted to do our own developing and printing, but nevertheless, as far as the average snapshotter is concerned, the slogan is perhaps the best one of all. I have found that not everyone who buys a camera wants to delve into all the mysterious processes of developing, printing, etc. He wants mainly to be able to make a recognizable likeness of a scene or person, and let it go at that. He doesn't know about lenses, emulsions, exposure, filters and all the other factors so dear to the heart of the dyed-in-the-wool amateur . . . and cares less. He wants only to make good pictures.

Years ago good pictures were not possible unless the cameraist had a pretty good idea about all these matters, and so it was necessary to be fairly expert in the various technicalities of photography in order to turn out good work. But today what is the status? Science has worked overtime to produce marvelous cameras of precision which make themselves hardly noticeable as they are carried about in a pocket, magic lenses of fearful aperture, films so fast that they almost make it possible to photograph a black cat in a dark cellar at midnight, and amazing meters which accurately indicate the correct lens and shutter settings for any given lighting condition. In short, modern cameras are practically automatic; obviously vastly superior to those offered only a few years ago. Why has so much progress

been made? Wasn't it so that more people could enjoy photography, and make it possible to secure good pictures without the necessity of being a technician? It would seem so.

In short, photography today holds no mysteries. It has been broken down into definite manipulations which, if properly done, result in highly satisfactory photography. Naturally, a great amount of research and experimentation has been done to achieve this, but now that perfection is practically here, why not let us enjoy photography and take advantage of its marvels and the wonderful things science has produced for us?

To cite but one example, remember only a few years back when the popularity of the miniature camera had everyone crazy trying to solve the fine grain problem? Every owner of a small camera, and large camera, too, for that matter, was fooling around with borax and paraphenylene-diamine in an attempt to kill that bugaboo grain. It is inevitable that the problem be solved, and it has been solved for some time now. We even have prepared developers of excellent characteristics available in bottles which, a few short years ago weren't even dreamed of. Whenever I have some developing to do, I get a bottle of M.P.G. and go to it. On the other hand, I know of enthusiasts who are still experimenting with different formulas, films and whatnots. Not until they settle down to a known developer and film will they be able to produce good work, but apparently they are more interested in experimenting than in making pictures.

My plea, as possibly you may have gathered thus far, is for simplicity in photography. Why must the beginner be confused with a maze of technical data, especially when he is not inclined to be interested in it? The time has come when we may regard the camera as a tool, just as brushes and paints are tools in the hands of the artist. Given a set of easy-to-understand instructions, the beginner should be able to turn out creditable pictures by merely understanding his camera. Even developing has been brought down to terms of simplicity . . . the prepared kinds, for example, are as good, if not superior, to any the individual might make up himself after a half-hour weighing and mixing chemicals.

Of course you will notice that my mind operates

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along lines of picture-making and not involved technicalities. It just so happens that I prefer to regard the camera as a tool or an aid in the making of good pictures. I am not keen on experimenting, for I believe that this is just a bit outside the realm of photography proper. The artist, I am sure, does not know how the pigments he uses are made. Such knowledge, while possibly interesting, is not necessary to the creation of a beautiful painting. There must be some connection here that is quite apparent . . . if I've placed the words in their proper order. I enjoy making pictures for the sake of pictures. All too many amateurs feel that photography is a medium which leads to chemical, physical and mathematical research; which it of course is, but Eastman's in Rochester spends many thousands a year in the research laboratories to save us, as individuals, the heart-breaks. The same goes for Agfa Ansco, Defender and DuPont. For one, I'm satisfied to take the word of the researchers that so-and-so developer is best for such-and-such a film and let it go at that. Far be it for me to step out and set up a research or experiment station of my own, only to arrive, sooner or later, at the same conclusions that were made available years ago.

However, don't misunderstand me . . . I'm not knocking the boys with a flair for dabbling. In fact such is not my intention, for, as perhaps you may know, I've done considerable dabbling myself in the past, and in all modesty can say that I know quite a few things about this business of photography. I am not fighting, however, for the beginners chiefly, because they are the ones who have it tough when they start. I have had this brought home to me in no uncertain terms on many occasions in my routine work as dean of one of the largest photographic schools in the country. Therefore I try as far as is possible to make the way easier for the neophytes, knowing full well that as time goes on, they will sooner or later find themselves either as photographers or technicians, whichever their tendencies dictate. Of course we must have the technically-minded boys as well as the artistic snappers, but to start with, I believe photography can be brought down to the elements without scaring off at least fifty per cent of the possible eligible future camera adherents.

There is one fact which I have never permitted myself to forget. And that is, that no one indi-



vidual can learn everything about photography, or even one of its off-shoots such as chemistry, optics and the like, in a whole lifetime. Everyone must at some time or another determine for himself just what branch he is best suited for. Photography is not quite like any other activity . . . there are so many allied interests which can attract and hold the attention of the amateur. I'm just one of those old-fashioned types who uses photography for the purpose of producing pictures, and while the side-roads interest me no end, I like to regard my cameras as picture-makers rather than foils for scientific experiments.

I have often noticed, too, that those who major in technics are not always able to produce good, clean pictures. The photographer type, however, who attends to composition, beauty, lines, masses, and other artistic matters and uses the camera merely as a medium with which to record them, turns out really superlative prints of genuine artistic merit. A knowledge of camera handling is, of course, necessary, as the artist must know how to wield his brushes . . . but, well, you get the idea. What are you? Photographer or experimenter? Not that I care . . . I shall like you just the same and respect your opinions, just as I hope you will respect mine and pardon me for getting into a thing like this in print.

New York Institute Reports Receiving Calls For Qualified Photographers to Fill 116 Positions in 1936

The business, or profession, of photography, has just closed one of the biggest years in its entire history—and certainly the best one since 1929, according to N. Y. Institute, America's largest school of photography.

This observation is based partly upon the increased demand for trained men and women and partly on nation-wide sales of cameras, equipment and supplies.

The Institute, which maintains a free employment service to help its students and graduates get positions, received one hundred and nine separate calls from photographic studios, stores, equipment manufacturers, movie producers and other concerns last year.

Some of the calls were for more than one person, bringing the total number of actual jobs up to one hundred and sixteen. And this, of course, comprises only a very small fraction of the total number of positions which were open. From all present indications, 1937 should be a still greater year for photography.

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Motion Picture Sound Recording

CHAPTER XXX

WE TURN now to a consideration of the film used in the sound recording machines. To be a thoroughly qualified sound engineer, a man must be familiar with motion picture film, the processes of film development and printing, and the laboratory technique surrounding the measurement of gamma, as well as being precisely trained in his own duties relating to the operation and maintenance of the sound recording equipment.

In this chapter we deal with the type of film used in motion picture sound recording. This is a matter of great importance, because if the highest quality of sound is to be secured it is necessary that the film as well as every other constituent of the sound recording line-up be as perfect as is humanly possible to make it.

Positive Film Used for Sound Track

The negative film stock used in motion picture cameras for the photographing of scenes is not the same as the film stock commonly employed in recording machines for recording the sounds accompanying the scenes. After exposure in a motion picture camera, the negative film stock is developed and printed on positive film stock, which in turn is developed after being exposed to the printing light. But in the film recording machines employed for recording sound in a track near the edge of a strip of motion picture film, positive film is used because it has less "grain" than negative film, and it is much cheaper in cost.

A positive print is made from the positive film stock used for the sound track in the same manner that a positive print is made from the negative film used in the camera. Paradoxically, to differentiate between the positive film stock and the positive print, the positive film that is exposed in the film recording machines is called the "sound negative," because the final positive is printed from it.

The "Grain" of Film

A piece of film that is exposed to light and developed has on it an image of the objects which reflected light against it and exposed it; but that image is not smooth and homogeneous; it is composed of a multitude of minute specks that cannot be seen individually under even the most powerful magnifying glass. These specks constitute what is known as the "grain" of film. Although they are not large enough in themselves to cause trouble, the specks have the odd faculty of so reflecting light that they appear to collect in groups and form larger specks.

These specks are crystals of solid silver formed on the celluloid film base, and as such they are covered with a multitude of little reflecting faces, or facets. A light shining on the crystals is reflected from one to another, back and forth, and cannot get

through the film at that point because of the reflection and re-reflection of the light beam. This multiplies the apparent size of each speck many fold, and produces the optical illusion of a much larger black spot when light is thus shined through the film. The effect is really one form of what is known as "hallation," and is termed "diffusion hallation."

Fine Grain Essential

As far as possible, the grain of the developed and fixed emulsion should be maintained extremely fine—or rather the reflecting quality of the crystal facets should be reduced to the lowest amount by treating them chemically in the fixing solution to dull them—in order that the grain will not be evident in the film. Naturally, the more homogeneous and smooth the image on the film, which is to say the finer the grain, the better the image will be.

Effect of Grain on Sound

The above is particularly true of a sound track of the variable density type (such as produced by an aperture of fixed dimensions and a sound lamp of varying intensity), because in such a sound track the exposure lines representing the high frequency sounds are very narrow and very close together. If these lines are not smoothly and evenly recorded by the film, the reproduced sound will not be a faithful copy of the sound that was recorded, because the light beam used in reproduction will not be cleanly interrupted by the striations in the sound track. If the grain is too coarse, the reproduced sound may even have noise in it from that source.

Positive film stock is not used in motion picture cameras, because it is treated with a "slow" emulsion made up mostly of silver chloride crystals, with silver bromide crystals sometimes added, carried in suspension in a solution of gelatine. Because of its composition, positive film stock requires a much greater exposure than the faster negative film emulsions, which are made up entirely of silver bromide crystals in place of the silver chloride crystals. From one to ten per cent of silver iodide is often included in these emulsions.

Regulation of Sound Track Exposure

The greater exposure to light required by positive film stock can be provided by slowing down the rate of speed at which the film moves through the camera or recording machine, or by increasing the brightness of the light that causes the exposure of the film. The result in either case is practically the same. But since the speed of movement of the film is kept at precisely ninety feet a minute in the cameras and recording machines in sound picture work, this speeding up is not possible.

Greater exposure of the film is easily accomplish-

ed in a film recording machine by increasing the intensity of the light source producing the exposure. It is usually not practicable to increase the light causing the exposure of the film in a motion picture camera, however, because the illumination used on sets is generally as intense as the dictates of convenience and economy will permit.

In the next chapter we will consider the manner in which portable sound recording equipment is used on the permanent sound stages.

Course in Radio and Sound Recording

Our Associate Editor, Charles Felstead, who is now completing his third year as Instructor in Commercial Radio and Sound Recording at the Frank Wiggins Trade Evening School, Olive Street and Venice Boulevard, has sent us the following outline of the course he is conducting.

The object of this course originally was to train men connected with the radio trades to obtain the Department of Commerce radio licenses—Radio-telephone first-class or Radiotelegraph second-class—which are necessary for employment as ship radio operator, or as operator in a land radio station or broadcast station. Now the course has been amplified to include training in motion picture sound recording to improve the qualifications of men already engaged in this profession and to train radio men to fit themselves to the requirements of this highly specialized field.

The course required forty weeks for its completion, and is divided into beginning and advanced semesters. Mr. Felstead conducts two classes: The beginning group on Tuesday evening and the advanced class on Wednesday and Friday evenings. Both beginning and advanced classes start in September and February; so both groups are being organized at this time for the next five months' semester. This being a Los Angeles public school, a charge of only one dollar a semester is made. Those eligible to attend include studio sound technicians and cameramen, electricians, radio operators, radio amateurs, aircraft pilots, telegraphers, and radio service men.

Radio and sound recording course outline:

I. Electricity and Magnetism:

1. Electronic theory.
2. Principles of direct-current electricity.

II. Storage Batteries—Auxiliary Power:

1. Storage batteries used in radio communication.

2. Operation.
3. Care.
4. Charging circuits used on shipboard.

III. Motors and Generators—Power Supply:

1. Principles or operation.
2. Care.
3. Circuit diagrams—automatic starters.
4. Vacuum-tube power supplies.

IV. Vacuum Tubes:

1. Elementary theory of operation.
2. Advanced theory of vacuum tubes.
3. Theory of amplification and detection.
4. Vacuum-tube oscillatory circuits.

V. Receiving Apparatus:

1. Principles of operation.
2. Circuit diagrams of commercial receivers.
3. Adjustments.
4. Troubles and repairs.

VI. Transmitting Apparatus:

1. Theory of spark, arc, and tube transmitters.
2. Circuit diagrams of commercial apparatus.
3. Adjustments.
4. Troubles and repairs.

VII. Radio Compass:

1. Principles of operation.
2. Circuit diagrams of commercial apparatus.
3. Adjustments and repairs.

VIII. Radio Aviation:

1. Principles of operation.
2. Circuit diagrams of transmitters and receivers.
3. Radio aids to blind flying.

(Turn to Page 23)

BY
CHARLES
FELSTEAD
ASSOCIATE
EDITOR



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Upper left—The town of Ryan, in Death Valley, railroad station of the Ryan Borax Mine. Upper right—The bathing pool in the park at Ryan. Center—Betty Furness at park in Death Valley. Below—Picture shows the old Twenty Mule Borax Team making their last journey before retirement. This scene was used in the picture.

Director, Norman Foster; assistant director, Aaron Rosenberg; first cameraman, Syd Wagner; second cameraman, Bill Abbot;

What Is A Factograph Camera ?

Complete scientific data concerning photographic recording aboard the balloon "Explorer II" during the 1935 Stratosphere Flight is contained in an article by E. S. Hinline, Chief Engineer of the Folmer Graflex Corporation, appearing in the National Geographic Society's recently published monograph on the flight.

The article deals in particular with the use and operation of the three National Graflex cameras used to make color photographs of the stratosphere sky and to photograph instruments within the gondola and the six Factograph cameras used to make periodic exposures of instrument readings.

The color photographs obtained with the National Graflex were the first records ever made of the color-carrying properties of stratosphere light. They were among the most interesting photographic records obtained during flight.

Of further interest is Mr. Hinline's detailed explanation of the construction and operation of the Factograph cameras. These carried separate, demountable film magazines with film feeding devices within them. These magazines could be removed from the camera and loaded in the dark-room. These cameras were motor driven and provision was made for intermittent action so that ex-

posures could be made automatically at any time interval decided upon. This intermittent action was attained by the use of a standard toothed sprocket which, in turn, was driven by an interrupted gear.

Mr. Hinline calls attention to the fact that considerable thought was given to what might take place in a flight of this kind. Accordingly, all magazines of the Factograph cameras could be removed

(Turn to Page 24)

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PERSPECTIVE

Installment IV

By LEWIS W. PHYSIOC

MODERN motion picture technique is making increased demands upon the many departments specializing in artificial effects, such as painted backings and miniatures, especially the latter. What is more significant, the methods of producing these miniatures are being greatly modified and economized. It is being shown that a great deal of the expensive building is being substituted by painting; and if this be well done, the effect and illusion is artistic and convincing.

It must again be mentioned that a perfect illusion depends upon accurate scale and correct perspective. The combination of scale and perspective is important in those instances where stage space is limited and the desired effect of great distance is not permitted by these limitations.

As an example, a miniature is contemplated where it is necessary to show many miles of countryside, a vast city stretching away in the distance. The stage space permits of only a few feet depth, and the space between the foreground and the backing (which is to represent infinity) must be made to appear as the great stretch of space.

In treating such a subject on a single plane, such as the single backing or stretch, presents no greater problem than the regular rules of perspective, as treated in the previous installments. But when the miniature embodies several planes, such as rows of buildings, set rows of intervening hills and valleys, the problem demands that each of these intervening rows must have its individual scale and diminishing values. If these are properly calculated, the narrow operating space may be apparently stretched out into the desired grandeur of the unlimited area.

Plate 6 shows how the new system of perspective is applied to this problem.

Fig. 1 represents the plan of such a miniature. The space between A and G is about 40 feet, but must be made to appear perhaps 40 miles.

There are two ways of treating the subject. First: It may be thought proper to represent a portion of the foreground in the rows of buildings, or set rows and continue the rest on to the drop. Second: It may be preferred to have the backing represent only infinity, with all the intervening part represented in the set pieces.

The first we treat under L, the left side of the plan; the second under R. A, B, C, D, E, F, G show the positions of the set rows. The problem is to find the diminishing scale for each set piece, i.e., given a scale for the first set piece, how much would this scale be reduced for each other set piece, according to its distance from the one in front of it, and so on until the position of the backing is reached.

Operation: Fig. 1 (Plate 6) shows the plan of the

miniature, laid out on a convenient scale. For an extensive area, as a miniature usually represents, it may be $1/32"=1'$ or $1/64"=1$ foot.

Fig. 2 shows the vertical angle, as shown in Plate 1 (first installment).

On the plan (Fig. 1, Plate 6) extend a series of lines, at will, up on to the backing, at o, b, c, d, e, f, g. These lines merely establish the identity of the set pieces and furnish a space upon which to record the scale of each set piece.

Extend the positions A, B, C, D, E, F, G over to the vertical plane at A', B', C', D', E', F', Fig. 2.

It may be noticed the height of the horizon appears inconsiderable, compared to some of our earlier examples. In miniature work the horizon is a matter of comparative value. As an example: If it be necessary to have the camera at a height of 30 feet to properly view an area where the foreground would be 2,000 feet distant, what would be the height if that area were represented in a miniature with a foreground 150 feet distant?

$$30 \text{ ft.} : 2000 :: ? : 150$$

30×150

$$\frac{\text{————}}{2000} = 2\frac{1}{4} \text{ ft.} = \text{the proper horizon for miniature.}$$

Place the scale on the line between A' and the intersection at the horizon, and ascertain the measurement. In this instance it is 37 ft. 6 in. B', C', D', E', F', G' are likewise measured—35 ft. 6 in., 30 ft. 0 in., 32 ft. 0 in., 29 ft. 6 in., 29 ft. 0 in., 27 ft. 6 in., respectively.

o, b, c, d, e, f, g represent these same values. By dividing these spaces, respectively, into the number of parts indicated, we secure the proper diminishing scales for each set row, including the backing, A, O, at which plane the perspective is continued on to the backing.

Having secured the equivalent of one foot, any number may be chosen as a convenient unit—in this instance it is 5 feet.

In laying out the drawing on the set pieces, it will be seen that at a point representing the foremost position, row G, 5 feet, would be equal to the two tick-offs S and T on line g. The farthest point

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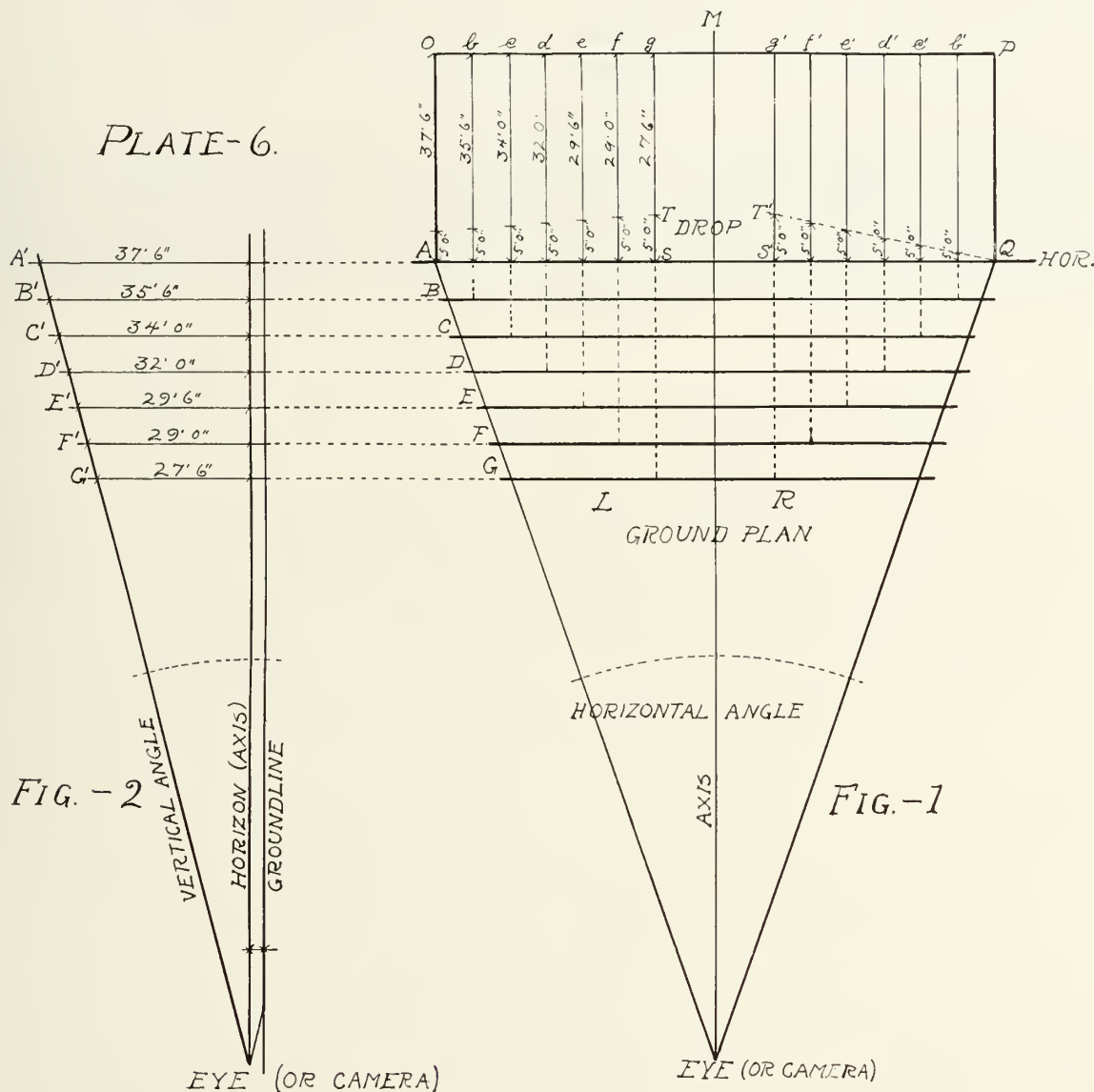
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of distance on G must not be **less** than the tick-off space on line f and the nearest, on F, should not be **more** than is shown at the tick-offs S and T on line g; and so on with the others, E-e, D-d, C-c, B-b, A-o.

Thus the objects of familiar dimensions, such as trees, fences, houses, doors, windows, etc., will bear a proper relation to each other. Each set row will so blend together, there will not be the slightest suggestion of the empty spaces between the set rows.

it may be necessary to convert it to a more convenient scale when producing the painting of set rows. The plan, as laid out on the small scale, shows the foreground as being approximately 75 feet and a backing 100 feet long. And this may really represent the limited area of the stage upon which the miniature is to be built. But remember, although 75 feet is a considerable foreground, and 100 feet quite a large drop, they nevertheless represent a much greater area, perhaps many miles.

PLATE-6.



At the right side of the plan (R, Fig. 1) the procedure is somewhat different. Here the backing represents merely the sky, with possibly a marking of contour of the horizon line. The entire distance between foreground and horizon is now forced into the space occupied by the set rows.

In this treatment, only the scale at the first row, G, need be secured. By extending the line from T' to the point of infinity at Q, the scale for this treatment is secured. Five feet at the nearest place of the set piece G-g' will be the same scale as G-g of Section L of the first treatment: But 5 feet at A-O (the position of the backing) will be but a point of infinity. Five feet at B-b', will be only the inconsiderable distance as shown between the tick-off on line G'.

After having secured the scale of the small plan

Let us assume that the back drop represents one mile of the actual area; then

$$5 \text{ ft.} : 100 \text{ ft.} :: ? : 5280 \text{ ft.}$$

$$5 \times 5280$$

$$\text{————} = 264 \text{ feet}$$

$$100$$

Therefore, an object measuring 5 feet, painted on the drop, would represent a distance of 264 feet: And the scale on line g would represent the same 264 feet on the foreground set row, G.

Of course, such an unwieldy unit as 264 feet must be divided into a convenient scale. But it must be realized that the problem here treated is one of the most difficult with which the artist and camera-man have to deal. The perfect illusion is absolutely dependent upon the correct rendering of the **scale** and **perspective**.

The Colorful Career of the Newsreel Man—His Life a Constant Sacrifice

By HERBERT ALLER

IMPOSSIBLE to avoid, one must eventually meet the curio seeker, the souvenir hunter or the inquisitive personage, so ordained because of nature's ruling. Peculiar because of their unusual proclivities, these distinct groups are still inconspicuous in number, too few to

he moves on to Palm Springs where, instead of the usual balmy weather, winter has set in to upset California's best touters. How Freeman would like to be at home!

Al Brick, of Fox Movietone, although warmly dressed, is anxiously waiting to leave his secret



Sam Greenwald, News of the Day; Irby Koverman, Paramount; Mervyn Freeman, Universal; Frank Blackwell, Pathe News; Al Brick, Fox Movietone News. (Tournament of Roses.)

discuss when the newsreel cameramen get into action. From the tiny tot who can hardly propel himself with any speed to the reticent banker who timidly grips his cane as he hobbles along, all eyes suddenly turn to watch man and machine reproduce photographically a permanent impression. The eye sees only once as a reality; translated it means that the people have concentrated to watch the newsreel man shoot an event of public importance.

Termed "dare devils," "death cheaters," "defiants of the gods," these men, to those who do not know them, occupy cherished positions. So many envy their romantic and colorful lives. One day at a race track, the next day on the gridiron, perhaps some other day in the front line trenches of a murderous civil war, and then again in the midst of a scorching forest fire, exit from which is generally a lucky escape. Publicized because of their pluck and courage, not to say anything of their physical prowess, as much as they are envied and admired, they are thought of only when the occasion brings them to public attention.

It is only by close association that one can forcibly express, in a most humble manner, the hardships and discomforts endured by this envied class of screen reporters. I relate it for the sake of truth and understanding, not to invoke sympathy; if for no other reason than to inform the reader that the newsreel cameraman is deprived of the general routine of every-day life, meaningless and unimportant, yet sacred when disturbed. Heroism, as preached by many writers hardly has any bearing when summarizing the personal sacrifices of these cameramen.

Generally the newsreel men have a base of operation. Los Angeles is considered the large and important one. Assignments vary in distance—sometimes a few blocks from the office, in contrast at other times hundreds of miles away from home. As I sit writing this brief sketch in a well-heated house, I can hear Roy Kluver's (News of the Day) teeth chattering in the wilds of Idaho, waiting to move on to Washington or Oregon. To him a hop, skip and a jump. To us a long journey.

On his way to South America is Bob Connell, of Universal News. Mervyn Freeman, also of Universal, is reported to be in Big Bear. From there

location to return to his castle; sometimes called just home.

Joe Rucker, of Paramount, and Willard Vander-Veer, now freelancing, both of whom were with Byrd on his first expedition to the South Pole, and John L. Herrmann, who went with Byrd on his second expedition to the South Pole, did confess that they would choose home in preference to adventure and fame.

Aside from endangering their lives, which by now has become a daily occurrence, these men constantly face the simple adversities of life which are so hard to bear under any circumstances. Before they could do any filming of the second air crash in the Los Angeles County district they were compelled to walk up a spiral path on a narrow road for hours; rain and a muddy road prevented any haste. Autos were out of question as there were no passable roads. After reaching the scene the men were compelled to wait until the injured could be moved. That being a matter of hours, they built a wood fire which served as a heating place while a few boards answered the call for beds.

A volunteer finally brought them some food at 4:00 o'clock in the morning, a skimpy sandwich and a cup of coffee—all of this so we can comfortably see it the next day on the screen and visualize what we either neglected to read or could not understand in the newspapers. Thrilling as it may be, how few of us would care to undertake this work when food is not to be had even in rations and clothes no longer sufficient to keep you warm.

During the New Year's Day Parade at Pasadena, I arrived there at 8:00 o'clock in the morning. The parade was scheduled to start at 9:00. Here were these screen reporters cheerful and alert, full of pep and ready for a day's work, for following the parade they were asked to cover the Rose Bowl game. I talked to two of them and asked: "What did you do last night?" They replied: "We went to bed at 10:00 o'clock—holidays mean very little to us. We have to be on the job when there is work to be done." So, while their community gaily rejoices in welcoming the New Year these boys retire early so that they may be in proper shape for the big event the next day.

Shooting completed, the newsreel cameraman rushes on—not home to sit quietly with his family, but to the airport or lab, depending on the story. On big events a local story is run, necessitating lab. work, without loss of a single minute. Some of the boys do their own editing. Others place that matter in the hands of their Pacific Coast supervisor.

If all who see the newsreel man in action, as he dashes through police lines and other forms of human obstruction, were to consider these hardships and discomforts before saying: "Gee, how I would like to be that fellow!" how few would be earnest in that thought. Life for the newsreel men is one complete sacrifice. Family, home, life—all are secondary. There can be no compromise, but instead

of envy, those who see them should say: "There goes a real fellow."

Little do the spectators know that the only organized part of the newsreel cameraman's life is his affiliation with the I.A.T.S.E. and M.P.M.O. of the United States and Canada and his local union, depending on his territory. Through this medium there has been established for the newsreel cameramen a standard scale of wages and a definite set of working conditions. Were it not for this beneficial understanding between employer and employee, the basic reason for working as a newsreel cameraman would be in a state of uncertainty without end.

Such is his life—you will never hear him complain.



Tournament of Roses, 1937.

PHOTOGRAPHED BY HERBERT ALLER.

The World's Outposts of the Motion Picture Industry

Merl La Voy, one of the brightest stars among the newsreel men of the wide, wide world, has arrived at Johannesburg, Africa, after more than a year's wandering over the Dark Continent.

When he departed Hollywood he had planned to be absent for two years or more, seeking the best backgrounds to be found on earth and, sure enough, he shows up in due time at the American Consulate, Johannesburg, South Africa, ready to report progress and prepared to spread the balance of Africa over his private maps and notebooks. A lot of luck to him.

On the slopes of the Himayalas it is said that there exists, high up, a fairy folk called "the Snow People," and that they have many times been seen by those who passed that way. Now, here's a chance for another Palmer Cox to furnish material for another Hollywood cameraman with imagination, courage and belief in myths. There is also said to be a strange and wonderful people existing in the Blue Mountains of India. They are called the "Todds." Another chance for Hollywood cameramen—many of them, perhaps, and something different to shoot at.

Paul Perry, back from his successful sojourn in the Orient, where he had a very large part in the establishment of color photography, in Manila and Calcutta, is once more looking toward the Far East—the "old homestead" of the Hollywood cameramen.

Chalmer D. Sinkey, who wrote "Hitting the High Spots with Infra Red," for publication in INTERNATIONAL PHOTOGRAPHER, has received no end of compliments for his clever composition.

Robert Miller is sojourning in Hawaii and reports from there have it that his new activities are most successful. Of course, cameras have something to do with it.

Len Roos has reached Singapore where he is photographing newsreel stuff. The Far East is an old stamping ground for Mr. Roos, if one can call a "stamping ground" where there is so much water. Mr. Roos has had long experience in China, Java, India, The Straits Settlements, Australia and Egypt. This time he goes alone, Mrs. Roos having recently passed away after a long and painful illness. THE INTERNATIONAL PHOTOGRAPHER wishes him a successful journey and extends to him our heartfelt sympathy.

Hal Mohr has completed his first feature picture as a director and everyone who saw it pronounced it a success. In addition to this professional success Director Mohr and his lovely wife, Evelyn Venable, admit that the shadow of The Storm is about to cross their threshold. THE INTERNATIONAL PHOTOGRAPHER extends enthusiastic congratulations.

Glenn Kershner, traveler, musician, author, orator, raconteur, cinematographer, member of the Adventure Club, authority on the South Seas, etc., is looking longingly to another trip to Tahiti. He has but recently completed three books on the South Seas and their people. Mr. Kershner is awaiting the outcome of several large offers to return to Tahiti, but he intends to remain in Hollywood if possible.

More than two hundred members of the cameramen, of Hollywood, exclusive of the newsreel men, have done "outpost duty" for the motion picture producers during the past fifteen years. Very soon there will be no national confines that have not known the tripods of a movie camera.

The star newsreeler of Europe, John Dored, is said to be now located at Paris. Mr. Dored was out on the front nearly 25 years ago, with headquarters at Riga.



Paul
Perry
in
India

Paul Perry, internationally known cinematographer and color technician, has just returned from a three-year trip around the world, photographing in color in many countries, including Hawaii, Japan, China, Indo-China, Cambodia, the Dutch East Indies, Straits Settlements, Siam, Burma, Ceylon, India, Morocco, Algeria, Tunisia, Germany, Spain, France and England.

Mr. Perry has been particularly interested in laboratories and has made a study of the different methods and equipment used in different parts of the world. In the Philippine Islands he built the first and only color laboratory and is preparing to build color laboratories in Japan, India and London, which will give these different parts of the world an opportunity of making color films.

The Philippine Islands, Perry believes, has more natural material for making unusual films than any other place in the world, as they have such a varied assortment of native life. In Manila there are the Tagalogs or Filipinos who dress in the most attractive costumes, the ladies in dresses with large sleeves and collars made of Piña cloth. This is a thread made from the fiber of the pineapple and is dyed in all of the colors of the spectrum.

The men wear what is called a *camiesa*, a shirt made of piña and worn outside the trousers. The trousers of most of the Filipinos, especially in the country, are red and with the colorful shirts, when one sees a gathering at a cockfight, or in the fields, it reminds one of a carnival.

In the mountains of the Island of Luzon (the same island that Manila is situated on) live the Igorotte head hunters and, while head hunting has been practically stopped by the Philippine Constabulary, there are isolated cases that occur.

DUPLEX CINEMA EQUIPMENT AND THE CARLETON BROTHERS

If you would ask one of the younger movie producers of the present generation about the Duplex Company, he may not know. But—if you ask one of the pioneer producers, he will answer immediately.

During the early days of motion pictures many problems pressed for solution, in rapid succession, especially in the matter of machinery.

As a result of these technical demands, the Duplex Company came into being, and rapidly grew from a modest little shop operated by the brothers alone, to a magnificent factory employing a great corps of precision machinists.

Out of their efforts came the famous Duplex

"God's Gift of Color"



Upper left, Igorrotes of Luzon Island; upper right, welcoming Auber Wat; Perry "In the hands of Buddha"; Chester Burnett (Doc) Harris, President and General Manager, Filipino Films; cameraman; Chas. P. Boyle, of Local 659; Joe

There is another tribe, called Bagobos, who are tree dwellers and quite savage; they have villages in the trees with trailing vine walks and swings from one tree to another, a regular Tarzan colony. Their great passion is for white horse hair and if you have as much as would be in a half dozen violin bows the world is yours.

Another tribe is the Negritos, a pygmy race who very seldom grow to be over four feet six inches in height, a very timid people who still hunt with bow and arrows and disappear whenever they see a white man.

In the southern islands less than fifty miles from Borneo live the Moros, a Mohammedan people who

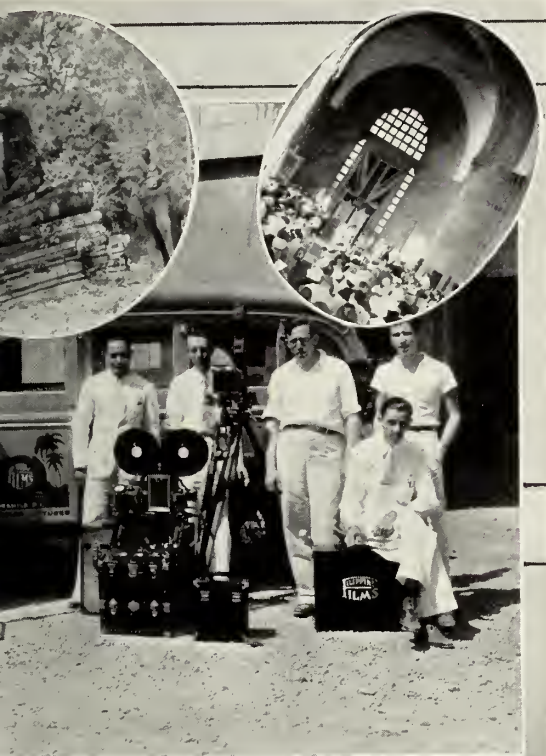
Printer, the developing machine and many other cinematic machines. But they built their machines so durably, the market soon reached the point of saturation, and so they chose to rest upon their oars for a time.

Then came another marked period of development in the industry—sound and color.

Now that the new requirements are becoming apparent, the Brothers Carleton have resumed activities to supply the demand. It is their belief that the development of color and its commercial simplicity demands attention: And that this development depends upon the proper design of color camera, printing machines and processing machinery.

Their ideas of color rendition are worthy of study. They believe that the manufacturers of film have successfully made their contribution toward

se to the World"



of India, Lord Linlithgow, Bombay; upper center, Buddha at
ft, Mois of Cambodia. Lower right (left to right)—George
ction Manager and Radio Engineer; Wong, noted newsreel
t News; Joe Rucker, Jr.; sitting, Paul Perry.

are subject to the Sultan of Sulu, the only monarch under the American flag. These people are known as sea gypsies, traveling all over the islands trading; they are also great pearl divers and Moroland is known as one of the finest pearl fishing waters in the world. All in all I look for many pictures to be made in the Philippine Islands in the future.

While on the Philippines I should like to say that George (Doc) Harris and his partner, Eddie Tate, together with their Technical Director, Louis Morse, are to be congratulated on the progress they have made in the production of Philippine pictures. They have constructed and are operating one of the most modern studios in the Orient, producing one feature

commercial color films and that the rest is up to the designers of the machinery.

Herbert Carleton's research in color photography likewise justifies his artistic ideas. He believes that progress has been deterred by the tendency on the part of some producers to outdo nature, on the one hand, and trying to make a color subject out of something unsuitable, on the other.

He believes that the present almost prohibitive cost of color films can be brought very close to that of the black and white by providing the proper machinery, and that the right design of these machines will proportionately simplify the entire color process.

As Mr. Carleton says:

"We have after many years experience perfected and constructed various kinds of color producing machinery, and with the aid of the Eastman and DuPont companies creating a successful me-



Paul Perry's equipment in India.

a month in the Tagalog language and they have just completed a picture, "Zamboanga," with English dialog, which will be released in this country shortly.

In India I was surprised to see so much activity in motion picture production. There are more than fifty studios and they make over three hundred feature pictures a year. All of their features run from eight to fifteen reels. Bombay is the center of production with Calcutta second. The most important studios which I either worked in or visited in Bombay were the Bombay Talkies. All of the heads of all departments were Germans, directors, cameramen, soundmen, laboratory men, art directors, etc.

Film City Studio, a service studio, leases space to different Bombay companies; Imperial Pictures make Cinecolor pictures and also features. Wadias Films and Prabhat's have a studio in Poona. The largest studio in Northern India is the East India Film Co. These studios all have modern automatic developing machines, all of European design. The cameras are about fifty-fifty American and European, as is the lighting equipment. Most of the sound is American and nearly all of the other equipment, cutting rooms, etc., are European, but I believe that there would be a big market for American equipment if the people over there knew about them.

Mr. Perry anticipates another trip to the Orient and it is not unlikely that he may make his home there.

"God's Gift of Color Sense to the World," is the title given to Mr. Paul Perry by an East Indian motion picture critic who became a great friend and admirer. He was also called "The Slim Aged Man," which will give a laugh to those who know him here in Hollywood.

dium of color-sensitive emulsion on film, we have perfected color processing machinery to make natural color productions a commercial success.

"The expenditure for color productions is but very little more than ordinary black and white if properly managed. The only increase is in the raw stock and one additional negative, and the extra cost of laboratory work is negligible.

"Our means of balancing colors through precision built processing machinery produces a result that is the most natural color produced by anyone that is known of to date. We have no set overdressed nor any vivid colors in order to produce our color. We do not attempt to outdo nature, but we do produce most natural and pleasing colors. We have some processed film, and all who have seen this projected have complimented us on our achievement."

AMATEUR^{movie} SECTION

Edited by F. Hamilton Riddel

Photofloods for Cine Lighting

WHILE the very efficient Photoflood Lamps, now used almost universally by amateur movie makers, are familiar accessories for interior shots certain data and other technical information on them seems desirable. To begin with, the family of Photoflood has grown; so let's get better acquainted with them. For a better knowledge of Photoflood characteristics will enable the amateur cinematographer to get best results when using them.

In the general field of amateur movies, there are now three different sizes of Photoflood Lamps in use. Each of the three lamps will operate on 105 to 120 volts, on alternating or on direct current, and all three are of the inside frosted type bulb.

Photoflood No. 1, of course, is the best known, for it was first to be used in amateur movie making. It met with such immediate success, due to high photographic efficiency and low cost, that it may well be described, without doubt, as "the lamp that lit the way for amateur interior movie making." The No. 1 closely resembles a standard 60-watt residence lamp, in size and shape. It draws 250 watts when burned at 115 volts, yet from a photographic angle it is the equal of approximately 750 watts of standard lamps. One may safely use on a single, regular house circuit, usually fused at 15 amperes, as many as five No. 1 Photofloods. When burned at 115 volts, the rated life of a No. 1 lamp is two hours. To those accustomed to long life in ordinary electric house bulbs, let this be understood: The No. 1 Photoflood's rating is more than sufficient for exposing many reels of movie film for a lamp that gives such ideal, high-intensity, light for interior movie making.

The intermediate size, No. 2, is the newest addition to the family of Photofloods. Somewhat larger in size, comparing with a standard 150-watt bulb, the No. 2 draws 500 watts at 115 volts, although for cinematic purposes it equals 1500 watts of ordinary lamps. Three No. 2 Photofloods can be safely operated on one regular house circuit. The light-life of the No. 2 surpasses the No. 1, being rated at six hours when used on 115 volts.

No. 4 Photoflood, largest of the series, is the size of a standard 300-watt general service bulb with mogul screw base. Its rated life is ten hours at 115 volts. No. 4 Photoflood is not generally used as frequently as the No. 1 and No. 2 lamps, due to the fact that it requires a mogul size socket and because circuits on which this lamp is to be used should be individually fused at 10 amperes each. However, for amateur movie clubs and organizations and for the serious cine worker, these requirements are not too severe. Properly fused, the No. 4's offer maximum results. Photographically, No. 4 Photoflood affords as much as two and a half times the effective light supplied by a regular 1000-watt, pear-shaped, Mazda lamp which has been

used extensively for many past years by photographers.

We are indebted to the Research Department of the General Electric Company for the following technical data on G. E. Mazda Photofloods:

Light output of Photofloods is measured in lumens which indicate the light given off in all directions. The lumen output of Photoflood Lamps at various voltages is:

Photoflood	105 Volts	110 Volts	115 Volts	120 Volts
No. 1	6,100	7,100	8,250	9,550
No. 2	12,200	14,200	16,500	19,300
No. 4	24,400	28,400	33,000	38,600

Amperage ratings of the three Photofloods are as follows:

Photoflood	105 Volts	110 Volts	115 Volts	120 Volts
No. 1	1.95	2.08	2.13	2.18
No. 2	3.98	4.16	4.35	4.45
No. 4	7.95	8.32	8.70	8.90

Candlepower ratings, in the following table, show the light output of Photoflood Lamps in terms of mean spherical candlepower, or, the average candlepower in all directions for the bare lamp alone:

Photoflood	105 Volts	110 Volts	115 Volts	120 Volts
No. 1	485	565	656	756
No. 2	970	1,130	1,312	1,512
No. 4	1,940	2,260	2,624	3,024

The color characteristics of the light of an incandescent lamp are determined by the temperature at which the filament operates. The higher the temperature, the greater is the improvement of actinic and amount of light emitted. But of course, increased temperature carries with it a shorter lamp life. Photoflood lamps, as a result, represent the best balance between a right volume of photographically effective light and lamp renewal cost.

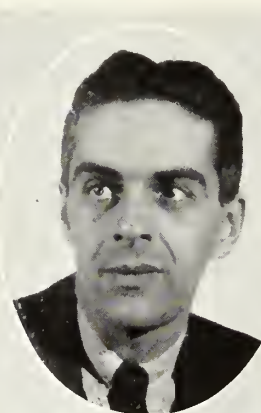
Summing up the distinct advantages of Photofloods for amateur cinematography, we find that:

1. The photographic quality of the Photoflood light harmonizes perfectly with the sensitivity of panchromatic and natural color films.

2. Owing to the flexibility and portability of Photofloods, many unusual lighting effects can be had. Certain interior set-ups, ruled out by some high-wattage lamps requiring that they be burned only with bases down, are entirely possible with Photofloods. Moreover, No. 1, 2 and 4's can be "mixed" to form a uniform quality of lighting.

3. And Photoflood Lamps are very inexpensive. Before these lamps wear out, movie makers will have received the ultimate in cinematographic light for the reasonable cash outlay of, and for the little current consumption on, the Photofloods.

It costs only \$2.50 in the U. S. for one subscription to International Photographer; \$3.00 in Canada and Foreign points.



BOOK REVIEWS

PHOTOGRAPHY" by Dr. C. E. K. Mees—Many books have been written on the art of photography, many on photographic technique and its applications, but in a book forthrightly named "Photography" it has remained for Dr. C. E. K. Mees, Kodak Director of Research, to provide in simple and popular style a general review of the whole subject.

This book, just published in this country by the MacMillan Company, is not only a mine of interesting information for the general reader but furnishes a complete background of knowledge for all who pursue photography, either as amateur or professional.

We find at the beginning, the history of photography compact in one chapter. Dr. Mees, one of the greatest authorities on this subject, then deals in turn with the manufacture of present-day photographic materials, modern photographic practice, the formation of the photographic image, the reproduction of tone values, cinematography, the reproduction of colored objects in monochrome and in color, and finally describes some of the widely differing applications of photography as in astronomy, the biological sciences, medicine and dentistry, timing horse races, and testing materials.

From the standpoint of the book's being a valuable work of reference, Dr. Mees here has put into print many facts in the historical development of photography not generally known as well as interesting facts about the industry, derived from his intimate association with those who during the past sixty years have been largely responsible for its growth, to say nothing of his own active participation since 1901.

In the initial chapter he tells us how photography "as a chemical means of letting light make its own picture" came about largely through accident, when a German physician named Schultze in 1727 was experimenting on the treatment of chalk with nitric acid in which he had previously dissolved some silver. He noticed that when sunlight fell on the mixture it turned black immediately, and followed the matter up to discover that the effect was due to the silver. Schultze made experiments with his discovery and recorded them.

Starting historically with this discovery—that silver compounds are sensitive to light—Dr. Mees gives a fascinating account of the development of photographic materials from the daguerreotype and calotype of 1839-51, through the wet plate era that ended in the seventies, the introduction of dry plates, then of roll films, and finally to the supersensitive panchromatic materials of the present day. The manufacture of photographic materials in various parts of the world today, he tells us, requires annually some 500 tons of pure silver, 6000 tons of cotton for the making of film base, 3000 tons of specially prepared gelatin and 12,500 tons of wood pulp for the production of photographic paper.

Motion pictures consume about half a million miles of film a year. Amateur photographers need about 1500 tons of film to make their snapshots and another 7000 tons of paper to print them on; professional photographers use about 8000 tons of film,

Dr. C. E. K. Mees, Kodak
Director of Research,
Author of New Book,
"Photography."



8000 tons of glass plates and 9000 tons of paper to make portraits and advertising features.

The reader whose knowledge of photography is largely confined to loading and manipulating his camera, will be quickly absorbed in the descriptions of how photographic film and paper are manufactured and of how the pictures he takes are developed and printed at the photo-finishers. He will be impressed with the remarkable achievements in photography in two generations when he compares the materials and resources available to him today with what the enterprising amateur of sixty years ago had to work with to make a photograph outdoors—wet plates which had to be coated and developed by himself on the spot in a tent "dark-room." Indeed, he was obliged to set up a photographic camp.

The reader particularly interested in the chemical aspects of photography will learn from diagrams and photo-micrographs as well as text, exactly how the photographic image is produced by the action of light and chemicals.

There is much useful information, too, for the amateur movie maker; for example, a detailed account of the actual processing of motion picture film, and in addition, some interesting and authoritative descriptions of the technique of motion picture production at Hollywood and of such professional studio business as **back projection**, the use of miniature sets and the creation of animated cartoons.

One of the most interesting and informative chapters is that on color photography. Starting with Clerk-Maxwell's color solution filters of 1861, the development of color processes both for still and movie photography is discussed, finishing with an account of Kodachrome, the natural color film for amateur still and amateur motion picture cameras. Each of the various processes now in use is fully explained and in addition there are excellent diagrams in color.

"Thirty years ago, I found it hard to conceive that great improvements in the art of photography were possible," writes Dr. Mees. "Today I am certain that still greater improvements are imminent."

"Photography" is illustrated with many fine plates, including several in color and there is a carefully compiled index. The new book is published by the MacMillan Company and is distributed

(Turn to Page 22)

CINE-TIDINGS

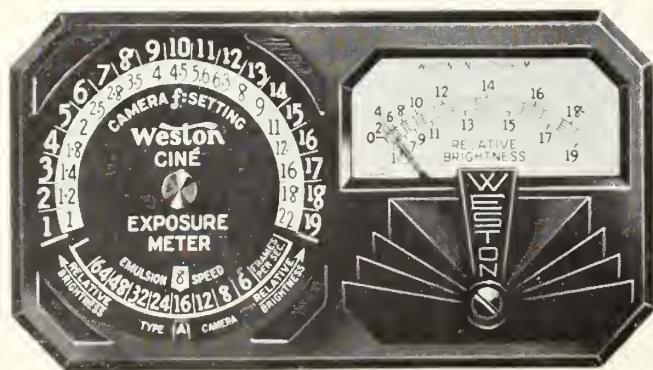
Amateur Movie News Reviewed

NEW Model Weston for Cine Work—Movie camera users, particularly those working with Kodachrome or other color films, will be interested in the newly designed Model 819 cine exposure meter just introduced by the Weston Electrical Instrument Corporation of Newark, N. J. In this new cine meter, the "viewing angle" of the Photronic Cell is limited to 25 degrees, corresponding closely to that of standard movie camera lenses, which generally cover a more restricted field than do regular still camera lenses. As a result of the restricted viewing angle of the new meter, accurate exposure determination may be made from the camera position for a large majority of scenes.

Also, a new "pre-set" type of exposure dial permits the user to set the film speed, frames per second, etc., in advance and read the correct aperture directly from the dial without turning a disk at the time the shot is being made. Despite this extra simplicity in use, other operating characteristics of movie cameras which affect exposure may be compensated for in "pre-setting" the dial, so that there is no sacrifice of accuracy in establishing the proper aperture. For example, certain cameras are known to have a greater angular opening of the shutter even though they operate at the same number of frames-per-second with the same type of lens. The effect of this factor on the proper exposure for similar scene brightness conditions is taken care of in a "pre-set" dial adjustment, which need be made only once so long as the same camera is used.

In the field, it is only necessary to note the "relative brightness" number shown on the meter scale, and use the aperture setting shown adjacent to this number on the exposure guide.

Bringing the field of view down to a 25-degree "solid angle" (in both vertical and horizontal directions) is regarded as an important achievement. With lenses having a smaller angle of view, the meter still provides exact exposure results, as 81% of its response is determined by the scene area within a 10-degree radius from the center point of the picture. Thus, possible errors in taking simple "average brightness" measurements from the camera position are limited to a few highly exceptional types of scenes. Naturally, the meter is equally suitable for "close-up" brightness measurements, desirable when you wish to regulate exposure according to the brightness of some specific object within the scene area.



New Model 819 Weston Meter

As is evident from the accompanying illustration, the new meter is similar in size and shape to the Universal type recommended for photographers who use both still and movie cameras.

Agfa Ansco Film Folder—A small folder, listing the several types of Agfa 8 mm. and 16 mm. amateur film emulsions available, has recently been issued by the Agfa Ansco Corporation of Binghamton, N. Y.

There are seven kinds of amateur films described, both reversal and negative-positive types, with succinct details describing the specific advantages of each. An enumeration of special laboratory services available at the many Agfa Ansco Laboratories is also included. The new folder will be of interest to all amateur cinematographers.

New Low-Priced 16 mm. Cine-Kodak E Announced—From the Kodak City of Rochester comes the announcement of the new 16 mm. Model E Cine-Kodak, listing at only \$48.50—the lowest priced 16 mm. Cine-Kodak ever offered to the home movie maker.

Low price, however, is not the greatest news. Cine-Kodak Model E is a brilliant movie maker, new and distinctive in appearance, and incorporates features and refinements found only in higher priced 16 mm. Cine-Kodaks. In every respect, it has all the quality generally credited to a Cine-Kodak.

One feature is the supply and take-up spools working in the same plane. Ordinarily, this one-plane arrangement means that one reel is above the other, resulting in a vertical camera shape—which shape is rather difficult for hatted movie makers to use. One cannot sight it without the upper portion of the camera interfering with one's hat brim. In the "E," however, the upper reel is staggered forward. As a result, the Model E Cine-Kodak may be used without interfering with even the broadest hat brim.

The one-plane design also makes for easier film threading; this advantage has been increased by a new film gate which is simplicity itself.

The "E's" view finder is fully enclosed, giving an unusually brilliant image and aids concentration on the scene being shot, by eliminating distractions. Within the finder is a unique and useful feature—a film footage indicator. As you shoot, you can keep track of the amount of film you are using. No need to stop in order to check up on how much film is left. Of course, there is in addition the usual footage meter on the side of the camera. Both meters are fully automatic.

The "E" can be operated at any of three speeds—normal, intermediate, and slow motion—16, 32, and 64 frames-per-second. Standard lens equipment is Kodak Anastigmat 20 mm., F 3.5, fixed focus. With the increased speed of film, particularly Kodachrome, this lens is said to be capable of rendering excellent results under a wide variety of light conditions. A permanently attached winding handle for the spring motor is incorporated in the "E." Fully

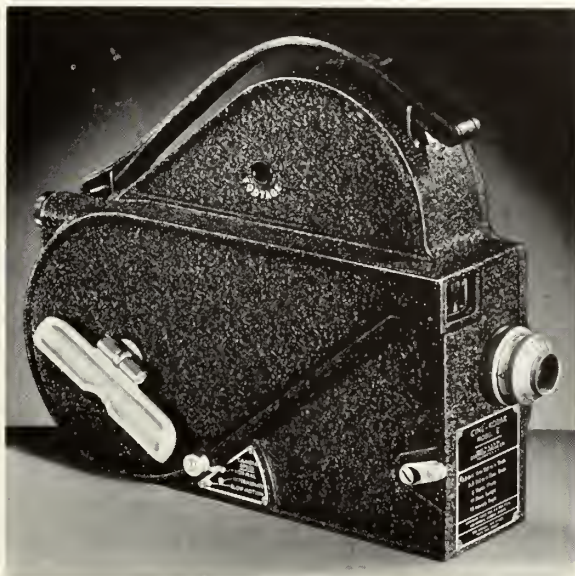
wound, the motor runs for half a minute at normal 16 speed, and is quiet and smooth in operation.

Cine-Kodak E has a film capacity of either 50 or 100-foot rolls of 16 mm. film, black and white or Kodachrome. The case is die-cast aluminum, with black outside finish. The carrying strap is placed so that the camera is nicely balanced. A tripod socket, fitting standard amateur tripods and titlers, is on the camera. To be available is a carrying case for the Model E Cine-Kodak which will hold camera, two 100-foot rolls of film, and filters.

Bass Bargaingram—There comes to our desk a current copy of Bass Bargaingram, a very complete listing of 8 mm. and 16 mm. amateur movie equipment from the Bass Camera Co., 179 W. Madison St., Chicago, Ill. Special attention is given the RCA 16 mm. sound-on-film camera, for which the Bass Company is exclusive world distributor.

Paillard-Bolex—A new line of de luxe movie equipment, familiar abroad, has recently been introduced to the United States by the American Bolex Co., 400 Madison Ave., New York City. Known as Paillard-Bolex, a product of Switzerland, the firm's 16 mm. camera is designated as Model H-16. According to description, the camera is capable of producing truly professional effects, yet it is not a complicated piece of cine mechanism. Some of the Model H-16's new features are: Automatic threading, in which all loops form themselves when the film is fed into a channel; absolute correction of parallax from infinity down to two feet; still pictures, either instantaneous or time; rewinding of an entire 100-foot roll, as desired, for lap-dissolves or other reasons; clutch for disengaging spring motor; critical focusing; 200-degree shutter; semi-circular turret accommodating three lenses. The camera is covered with leather and chromium trim.

Companion projector of the Model H-16 camera is the Paillard-Bolex G-3, which is distinctly novel, for the one machine will run 8 mm., 9½ mm. and 16 mm. films. Changing over from one size to another is said to be extremely simple, and effected in no time at all, without the aid of tools. Controls of the G-3 tri-film projector are conveniently centralized, and customary refinements of best projec-



Model E Cine-Kodak, newest Eastman camera for Amateur Movies.

tion equipment are included. Laboratory tests, it is understood, show that the special optical system delivers 250 lumens to the screen with 500-watt lamp at thirty feet.

Three other projection machines are offered by Paillard-Bolex, which are similar to the G-3. Model G-816 for combination 8 mm. and 16 mm. film widths. Model G-16 for 16 mm. only. And Model G-8 for single projection of 8 mm. films.

GOERZ

KINO - HYPAR

f/2.7 and f/3

A camera is a mechanism of metal and leather that reproduces what it sees through its cyclopean eye, the lens. The Kino-Hypar, a Goerz Lens for professional and amateur cinematography, obtainable in the essential focal lengths, is an unbiased candid eye whose sharp, realistic vision of the subject is transmitted in undistorted fashion to the negative.

Typically Goerz in its high corrections, the Kino-Hypar has achieved a reputation for precise performance in this field.

Booklet P-2 on Request

**C. P. GOERZ AMERICAN
OPTICAL CO.**

317 East 34th Street New York

Amprosound Projectors—The Ampro Corporation, 2839-51 N. Western Ave., Chicago, Ill., has prepared a folder, entitled "The New Teaching Aid," which presents the value of 16 mm. sound-on-films for Visual Education.

Quoting the folder: "Tests in the appropriate classroom proved students learn 20% to 90% more, forget less, and learn in a shorter period of time when taught by sound films than when taught by other methods. The talking picture produces a simultaneous appeal to eye and ear. It gives the smaller school the laboratory and research material of the larger institutions of learning."

Los Angeles Cinema Club Meets—Color filming will occupy the entire February meeting of the Los Angeles Cinema Club, to be held February 2 at the Eastman Auditorium, 6706 Santa Monica Boulevard, Hollywood. Dr. A. Freebairn, Secretary-Treasurer, announces the presentation at the meeting of several reels of Kodachrome, photographed by club members, after which there will follow a general discussion of the films screened.

RIGHT OFF THE REEL

Typical Topics for the Amateur

SPLICER Conversion—A good many movie makers, who have been using 16 mm. splicers these many years, are finding themselves "behind the eight ball." For, with the increased popularity of 8 mm. and sound-on-film 16 mm. films, the cineamateur quite often discovers his present splicer a bit behind the times, as it cannot accommodate the newer films. While 8 mm. splices can be attempted, after a fashion, on the older 16 mm. machines, sound-on-16 mm. film is definitely barred due to its single perforations. Be up to date, therefore, and have your splicer, if it will not take all three kinds of film, converted into a universal model. The added convenience and accommodation far outweigh the slight cost for such conversion.

Marking Film Cartons—On first reflection, it seems hardly necessary to reiterate this subject, yet many a spool of film has gone astray due to the owner's neglecting to place his name and address on its carton. The processing laboratory has no way to identify such nameless films. So to save trouble and loss all around, do not fail to mark your film cartons immediately that you buy a new roll.

Intermediate Speeds, Not Listed—A certain well-known 8 mm. camera's speed control dial is marked off at 8-16-24-32 frames per second, and in use the dial is merely rotated to the desired speed. For the serious cine worker who desires even greater latitude in camera speeds, the design of this particular dial easily makes such available. The dial, it so happens, is subdivided between the engraved numerals by line segments. Thus, including the line segments along with the engraved numerals,

the following very varied choice of camera speeds is available: 4-8-12-16-20-24-28-32 and 36 speeds! Wherever a speed control is designed as the example named, this extraordinary choice of camera speeds may be had. The very slow speed of 4 will give an extra measure of exposure; more exaggerated fast comedy screen speeds; and is ideal for certain title or animation work. Twelve speed offers a better compromise, in poor light, than does 8; normal lifelike action is not so speeded up, yet additional exposure is gained—and a scene shot at 12 frame speed will give most satisfactory results when projected at normal 16.

Lens Cap—It is surprising what little regard the usual lens cap receives from movie makers. So often, it happens, in the flurry of filming the cameraman has forgotten to remove the cap, we suppose, that the offending member is quickly and forever discarded. But in spite of such exasperating experiences, it must not be forgotten a lens is a delicate entity and should receive careful care. Lenses should not be cleaned too often, still must be spotless for maximum cine results. Therefore, protect your lens from unnecessary exposure and "cap it" often.

Handling an Unloaded Camera—Amateurs possessing variable and slow-motion speed cameras often, in idle moments and for no good reason, will run the unloaded cameras. Motion picture cameras should never be thus treated, with the exception of testing them at normal speed or less, and such careless handling may damage the fine mechanism of the instrument.

BOOK REVIEWS

(Continued from Page 19)

by them through book stores and by the Eastman Kodak Company through photographic dealers.

"Amateur Films"—Planning, Directing and Cutting—By Alex Strasser—This book, translated from the German by P. C. Smethurst, is one of the newer additions on the subject of amateur movie making. Unlike the usual treatise, it does not deal with photographic technicalities involved in cinematography but is chiefly concerned with production possibilities, and how to effect them.

The seven types of films are thoroughly defined and discussed: Montage, Documentary; Documentary with Actors and Rehearsed Effects; Photo-Play; Impressionistic; Tricks and the Abstract. Subject matter for the usual amateur film is carefully considered by the author and many illuminating ideas are expressed by him which will greatly assist all movie makers in general in making the most of cinematic possibilities.

Exact rules on preparing a shooting-script are noted in this new book, along with many helpful suggestions regarding camera angles and film tempo.

Post-production activity is considered next. The

fine points of the art and craft of editing are gone into, dealing with such editorial touches as technical and creative montage, rhythm of shots, parallel action and contrast, and general continuity of a film. These matters are so often overlooked by the average amateur movie maker that it is, perhaps, not too much to say that a careful perusal of the chapters in this book on this important subject will go far in improving the quality of one's films.

The closing chapters of the book deal with the question of titles when, again, the topic is clearly defined and discussed.

Contained in the volume are several clever diagrams and many interesting illustrations covering points and ideas expressed in the text. These are distinctly worthwhile to every amateur movie maker.

The author of "Amateur Films" has been in turn professional scenario writer, cameraman and film director so that his book brings his extremely wide range of experience to the service of the amateur.

"Amateur Film" by Alex Strasser is published by and is available from Link House Publications, Ltd., Link House, 4-8 Greville St., London, E. C. 1.

QUESTIONS AND ANSWERS

Cine-Service for Amateur Movie Makers

NOTE: This department is for your special benefit and use. It is a service open to all amateur movie makers who run into various problems in their movie making. And there's a standing invitation to submit your questions, which will be answered promptly in this department. Simply address your queries to Amateur Movie Questions & Answers, THE INTERNATIONAL PHOTOGRAPHER, 506 Taft Building, Hollywood, California.

1. How long should an average movie shot last in screen time?

The old rule for black and white filming states: Where there is no specific action to the scene, 10 seconds' screen time is sufficient. However, with many workers using natural color films, more recent experience has shown that the usual time limit may be increased. It is a safe rule, whether using black and white or color, to get plenty of footage. When you edit your processed rolls is the proper time to "time" individual shots.

2. What is the approximate shutter speed of a 16 mm. Victor camera?

The shutter speed of a 16 mm. Victor camera, per the Weston Exposure Meter folder, is stated at 1/30th of a second.

3. I should like to mail to a film laboratory an entire reel of movies, from which I wish paper enlargements made from certain frames. How can I indicate the exact frame selections?

A small piece of white thread can be tied into a single perforation at the precise spot from which you desire an enlargement made. To be consistent, we'd suggest you always use a perforation which borders the bottom of the desired frame. If preferred, a small notch between perforations—op-

posite the selected frame—may also be used. In either case, no damage, of course, is done to your movie film.

4. Is there an amateur motion picture projector which will accommodate various film widths?

The recently introduced foreign importation, Paillard-Bolex, will do so. There are several models of this make: One being a combination 8, 9½ and 16 mm. machine; another being a combination 8 and 16 mm.; and of course, individual projectors, per se, which will run 8 mm. and 16 mm. size amateur films. For one reason or another, the combination-projector has not been very popular in America, although it has its following abroad. No doubt the Paillard-Bolex "will start something" here in this country. For many movie makers are regularly using both 8 mm. and 16 mm. in their filming activities.

5. I have an 8 mm. camera and would like to photograph my own titles, using positive film. What should be my exposure?

There are so many various titling set-ups, each differing from the other, that it is best procedure to follow standard laboratory practice and make a test strip. With your copy ready and lighted, shoot the card, using each of the various diaphragm stops of your lens. For example, start with setting F 3.5, at normal 16 taking speed, and expose a few frames. About one foot of film is advisable. In turn, make other exposures, using successively F 4, F 5.6, F 8, F 11 and F 16. Develop the test at **normal time** and **screen** the result. This latter advice is recommended, as 8 mm. single frames are so very small that final appraisal of the proper exposure is best determined by projecting the test-film.

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MOTION PICTURE SOUND RECORDING

(Continued from Page 9)

4. Adjustments and repairs.

IX. Sound Motion Pictures:

1. Theory and principles of operation.
2. The various systems of sound recording.
3. Film recording.
4. Wax recording.
5. Circuit diagrams of commercial apparatus.
6. Operation, care, and maintenance.

X. Accounting for Message Traffic:

1. Classes of traffic.
2. Systems of word counting and charges.
3. Routing of messages.

XI. Radiotelegraph Operating:

1. International Morse Code.
2. Learning alphabet, numerals, and abbreviations.
3. Sending code to a speed of twenty words per minute.
4. Receiving code to a speed of twenty words per minute.

XII. Radio Laws and Regulations:

1. International Radio Laws.
2. U. S. Radio Laws.
3. Regulations governing operators.
4. Distress signals.
5. Violations and penalties.

The Cinematographer's Book of Tables

By FRED WESTERBERG

(Cameramen Should Add These to Their Little Red Books)

CHECKING THE CAMERA SPEED

35mm. FILM

FOR CAMERA SPEEDS BELOW NORMAL

Camera Speed In Pictures Per Second	Relative Camera Speed	FEET OF FILM TIMED	
		1	10
		STOP-WATCH READING IN SECONDS	
24	1.00	....	6.7
23	.96	....	7.0
22	.92	....	7.3
21	.87	....	7.6
20	.83	....	8.0
19	.79	....	8.4
18	.75	....	8.9
17	.71	....	9.4
16	.67	....	10.0
14	.58	....	11.4
12	.50	....	13.3
10	.42	....	16.0
8	.33	2.0	20.0
6	.25	2.7	....
4	.17	4.0	....
3	.12	5.3	....
2	.08	8.0	....
1	.04	16.0	....

FOR CAMERA SPEEDS ABOVE NORMAL

Camera Speed In Pictures Per Second	Relative Camera Speed	FEET OF FILM TIMED	
		15	30
		STOP-WATCH READING IN SECONDS	
24	1.00	10.0	....
25	1.04	9.6	....
26	1.08	9.2	....
28	1.17	8.9	....
30	1.25	8.0	....
32	1.33	7.5	....
36	1.50	6.7	....
42	1.75	5.7	....
48	2.00	5.0	10.0
60	2.50	4.0	8.0
72	3.00	3.3	6.7
84	3.50	2.9	5.7
96	4.00	2.5	5.0
108	4.50	2.2	4.4
120	5.00	2.0	4.0
144	6.00	....	3.3
192	8.00	....	2.5
240	10.00	....	2.0

TIME UNITS

EXPOSURE TIME OBTAINED AT VARIOUS CAMERA SPEEDS
AND AT DIFFERENT SHUTTER OPENINGS

Shutter Opening In Degrees	CAMERA SPEED IN PICTURES PER SECOND								
	192 (8x)	96 (4x)	48 (2x)	24 (1x)	20 (5/6x)	16 (2/3x)	12 (1/2x)	8 (1/3x)	6 (1/4x)
	EXPOSURE TIME IN TIME UNITS*								
240	.35	.70	1.40	2.8	3.4	4.2	5.6	8.4	11.2
230	.33	.67	1.34	2.7	3.2	4.0	5.3	8.0	10.7
220	.32	.64	1.28	2.5	3.1	3.8	5.1	7.7	10.2
210	.30	.61	1.22	2.4	2.9	3.7	4.9	7.3	9.8
200	.29	.58	1.16	2.3	2.8	3.5	4.6	7.0	9.3
190	.28	.55	1.10	2.2	2.6	3.3	4.4	6.6	8.8
180	.26	.53	1.05	2.1	2.5	3.1	4.2	6.2	8.3
170	.25	.50	1.00	2.0	2.4	3.0	4.0	6.0	8.0
160	....	.46	.93	1.8	2.2	2.8	3.7	5.6	7.4
150	....	.44	.87	1.7	2.1	2.6	3.5	5.2	7.0
140	....	.41	.82	1.6	2.0	2.4	3.2	4.9	6.5
130	....	.38	.76	1.5	1.8	2.3	3.0	4.5	6.0
120	....	.35	.70	1.4	1.7	2.1	2.8	4.2	5.6
110	....	.32	.64	1.3	1.5	1.9	2.5	3.8	5.1
100	....	.29	.58	1.2	1.4	1.7	2.3	3.5	4.6
90	....	.26	.52	1.0	1.3	1.6	2.1	3.1	4.2
80	....	....	.46	.9	1.1	1.4	1.8	2.8	3.7
70	....	....	.41	.8	1.0	1.2	1.6	2.4	3.2
60	....	....	.35	.7	.8	1.0	1.4	2.1	2.8
50	....	....	.29	.6	.7	.9	1.2	1.7	2.3
40	....	....	.23	.4	.6	.7	.9	1.4	1.8
30	....	....	....	.3	.4	.5	.7	1.0	1.4
20	....	....	....	.2	.3	.4	.5	.7	.9

*1 Time Unit = 1/100 of a Second

WHAT IS A FACTOGRAPH CAMERA?

(Continued from Page 10)


from the cameras in a very few seconds, placed in a sack or other convenient container and thrown overboard attached to a parachute. Being constructed of heavy drawn aluminum they were able to stand a tremendous amount of punishment without suffering light leaks.

Two of the Factograph cameras were set to make exposures at 90-second intervals. Two others made exposures at 15-second intervals. The remaining two were used in specially designed Spectograph apparatus—one inside the gondola and one outside. In all, these Factograph cameras, Mr. Hineline reveals, made nearly 10,000 exposures, every one of them perfect.

According to Mr. Hineline, Graflex cameras were chosen for the flight because of the faultless performance of these cameras on the 1934 Stratosphere Flight. "As revealed by the records," he says, "all of the cameras functioned accurately, performing the operations for which they were designed and built, throughout the flight."


BOOK REVIEWS

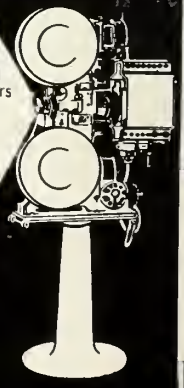
The sixth edition of PHOTO-MARKETS is now on the news stands, or may be procured from the publisher, John P. Lyons, Barrister Bldg., Washington, D. C. It tells all about what to shoot and where to sell it. The price is 50c.



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EXPOSURE UNITS

RELATIVE EXPOSURE (E) OBTAINED WHEN CAMERA IS OPERATED AT VARIOUS SPEEDS ABOVE NORMAL

Camera Speed In Pictures Per Second	Relative Camera Speed	F-VALUE OF LENS STOP (Standard Series)						
		11.3	8	5.6	4	2.8	2	1.4
		RELATIVE EXPOSURE IN EXPOSURE UNITS						
240	10	.4	.8	1.6	3	6	12	25
192	8	.5	1.0	2.0	4	8	16	32
144	6	.7	1.3	2.7	5	10	20	40
120	5	.8	1.6	3.2	6	12	25	50
96	4	1.0	2.0	4	8	16	32	64
72	3	1.3	2.7	5	10	20	40	80
60	2½	1.6	3.2	6	12	25	50	100
48	2	2.0	4	8	16	32	64	125
36	1½	2.7	5	10	20	40	80	160
30	1¼	3.2	6	12	25	50	100	200
24	1	4.0	8	16	32	64	125	250

Camera Speed In Pictures Per Second	Relative Camera Speed	F-VALUE OF LENS STOP (F/2.3 Series)						
		13.1	9.2	6.5	4.6	3.3	2.3	1.6
		RELATIVE EXPOSURE IN EXPOSURE UNITS						
240	10	.3	.6	1.2	2.5	5	10	20
192	8	.4	.8	1.5	3	6	12	24
144	6	.5	1.0	2.0	4	8	16	32
120	5	.6	1.2	2.5	5	10	20	40
96	4	.8	1.5	3	6	12	24	48
72	3	1.0	2.0	4	8	16	32	64
60	2½	1.2	2.5	5	10	20	40	77
48	2	1.5	3	6	12	24	48	96
36	1½	2.0	4	8	16	32	64	128
30	1¼	2.5	5	10	20	40	77	154
24	1	3.0	6	12	24	48	96	192

Based on shutter opening of 170° and film sensitivity (S)=1.0

EXPOSURE

EXPOSURE UNITS

(E)

APERTURE UNITS

(A)

TIME UNITS

(T)

SENSITIVITY UNITS

(S)

Mean Brightness of Subject in Candles per sq. ft.	Relative Exposure Indicated (E)	F-Value of Lens Stop	Relative Light Transmission (A)	Exposure Time in Fractions of a Second	Relative Exposure Time (T)	Weston Film Speed Rating	Relative Sensitivity (S)
768	1	26.13	.25	1/1000	.1	64	2.67
512	1½	22.62	.50	1/500	.2	48	2.00
384	2	18.47	.75	1/333	.3	40	1.67
256	3	16.00	1.00	1/250	.4	32	1.33
192	4	13.06	1.50	1/200	.5	24	1.00
128	6	11.31	2	1/166	.6	20	.84
96	8	9.24	3	1/143	.7	16	.67
64	12	8.00	4	1/125	.8	12	.50
48	16	6.53	6	1/100	1.0	10	.42
32	24	5.66	8	1/67	1.5	8	.33
24	32	4.62	12	1/50	2.0	6	.25
16	48	4.00	16	1/40	2.5	5	.21
12	64	3.27	24	1/33	3.0	4	.17
8	96	2.83	32	1/25	4.0	3	.12
6	128	2.31	48	1/20	5.0	2½	.10
4	192	2.00	64	1/17	6.0	2	.08
3	256	1.63	96	1/14	7.0	1½	.06
2	384	1.41	128	1/12	8.0	1	.04
1½	512	1.15	192	1/10	10.0	¾	.02
1	768	1.00	256	1/8	12.5	½	.01

$$E = ATS, \quad A = \frac{E}{TS}, \quad T = \frac{E}{AS}$$

When Filter Factor (F) is involved these equations become

$$E = \frac{ATS}{F}, \quad A = \frac{EF}{TS}, \quad T = \frac{EF}{AS}$$

TECHNICAL BUREAU OF THE ACADEMY OF MOTION PICTURE ARTS AND SCIENCES

January 25, 1937.—The Chairmen of the Art Directors, Film Editors, and Photographic Sections of the Technicians Branch of the Academy of Motion Picture Arts and Sciences today completed the appointment of nominating committees representing their respective sections to handle the nomination procedures for the various Academy technical awards.

Membership of the Cinematographic Awards Nomination Committee consists of: Ray June, Chairman of the Photographic Section of the Branch; John Arnold, Joseph August, Norbert Brodine, George Crane, Edward Cronjager, Arthur Edeson, George J. Folsey, Jr., Fred Gage, Merritt B. Gerstad, Byron Haskin, Thomas Ingman, Charles B. Lang, Jr., Virgil Miller, Victor Milner, Ira Morgan, J. M. Nickolaus, L. William O'Connell, George Robinson, Karl Struss, John Swain, Joseph Valentine, Joseph Walker,

Vernon Walker and Ray Wilkinson.

As was done last year, each Director of Photography in the industry has been asked to submit the names of the two productions which he considers to represent his best work during the year 1936. From this list of submitted pictures, the committee will, at its meeting on next Tuesday evening, select eight or ten productions for further consideration for nomination for the award. These eight or ten productions will be viewed on two or three evenings next week, and at its final meeting the committee will ballot to select the three productions to be nominated for vote of the general Academy membership.

In order to give these pictures every consideration from a photographic standpoint, and so that the committee will not be distracted by story, sound or other factors, the pictures being given final consideration will be projected without sound.

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Subcommittee on the Standardization of Synchronizing Systems for Cameras

(Technical Bulletin Academy Motion Picture Arts and Sciences)

A Consulting Committee consisting in general of the studio camera, laboratory and cine-technical department heads, and including in its membership George Crane and Emil Oster, representing Columbia; John Arnold, J. M. Nickolaus and Fred Flack, Metro-Goldwyn-Mayer; Harris Ensign, William Rudolph and Ray Wilkinson, Paramount; Harry Cunningham and William Eglinton, RKO-Radio; Godfrey Fischer, Grover Laube and Michael Leshing, Twentieth Century-Fox; C. Lindbloom, United Artists; F. S. Campbell and W. G. Robinson, Universal; and Fred Gage, E. B. McCreel and Al Tondreau, Warner Brothers-First National, was appointed to determine the various units of a system which upon adoption as an industry standard, would best meet the varied requirements of the industry.

A Sub-committee consisting of Wesley C. Miller, Homer G. Tasker and S. J. Twining was appointed to represent the Sound Recording Committee in the discussions of the standardization project with the above camera and laboratory groups.

We might point out that very thorough consideration was given to the relative advantages and disadvantages of the various positions for the synchronizing light which might be selected in the camera, and the continuous motion position selected and included in the specifications was chosen not only from the standpoint of present advantages, principal of which is the extreme accuracy with which the synchronizing mark may be located on the film at this point, but also because of the greater facility with which any code numbering or other film mark-

ing system which may later be developed may be adapted to the existing set-up.

The resulting standard is the product of a large number of committee meetings and inter-studio technical conferences, and has been approved by the committee representing the Laboratory and Camera Departments as listed in the body of this report.

Respectfully submitted,
Subcommittee on the Standardization of
Synchronizing Systems for Cameras
By S. J. TWINING, Chairman.

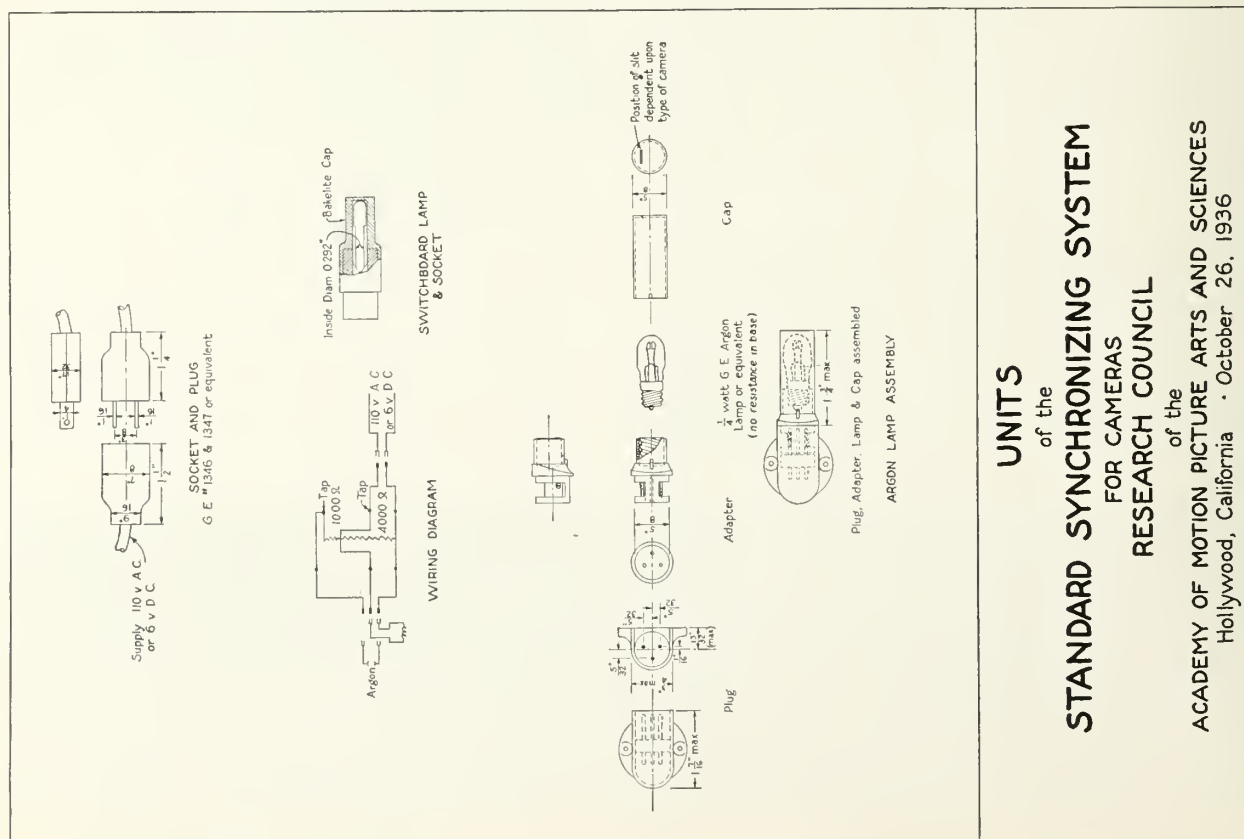
Specifications Research Council Standard Synchronizing System for Cameras

Subject: These specifications describe the combination and application of existing and/or modified commercial equipment to a system to synchronize the camera with the sound recording equipment, by fogging the film inside of the camera after the equipment is in motion and has reached operating speed.

These specifications are designed to cover the simple fundamentals of a synchronizing system, and may be elaborated upon in any way providing the fundamental dimensions and units of equipment are retained within the system.

The attached Research Council drawing entitled "Units of the Standard Synchronizing System for Cameras" shall be considered a part of these specifications.

The attached drawings entitled "Application of the Standard Synchronizing System for Cameras to the Mitchell NC Camera;" "Application of the Stand-

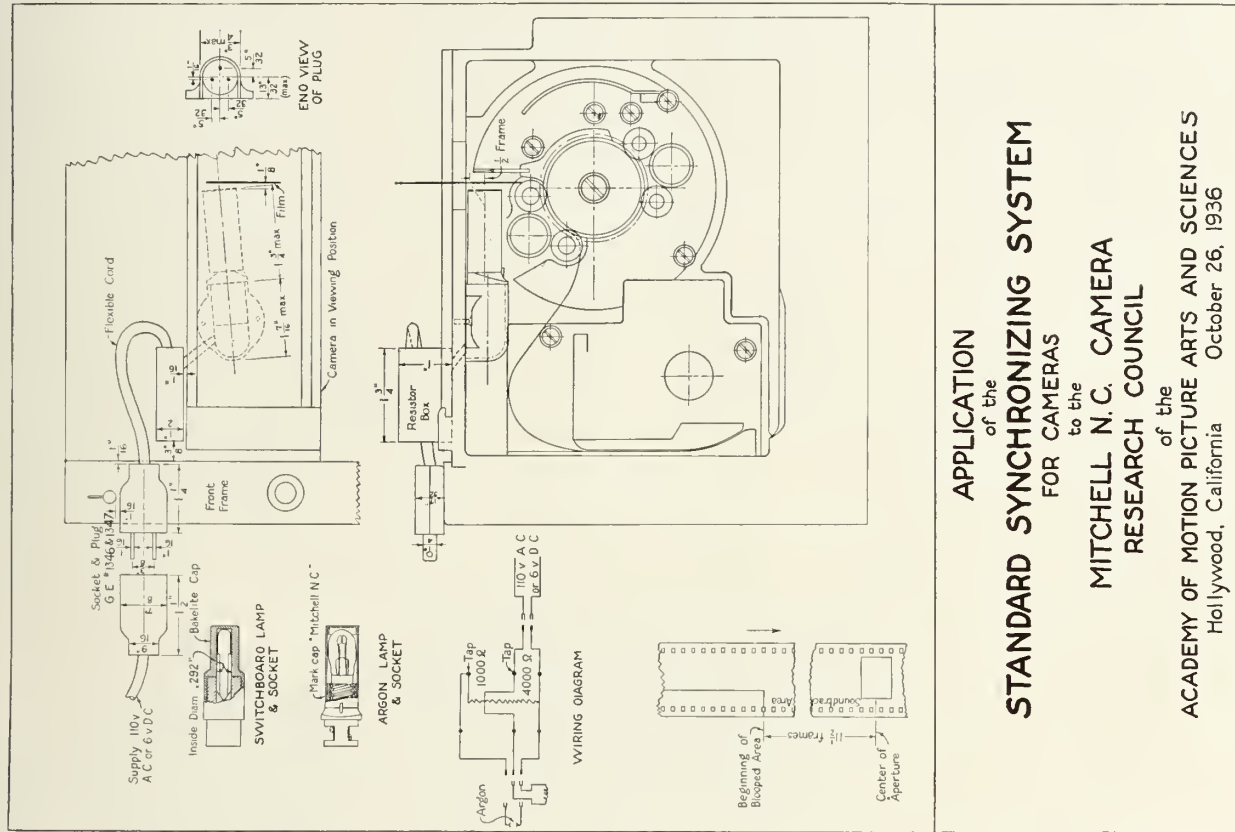


ard Synchronizing System for Cameras to the Standard Mitchell Camera," and "Application of the Standard Synchronizing System for Cameras to the DeBrie Super-Parvo Camera" shall not be considered a part of these specifications but are presented only to assist in the application of the Standard to actual studio practice.

Standard Units: The individual items of which this standard system consists have been so chosen

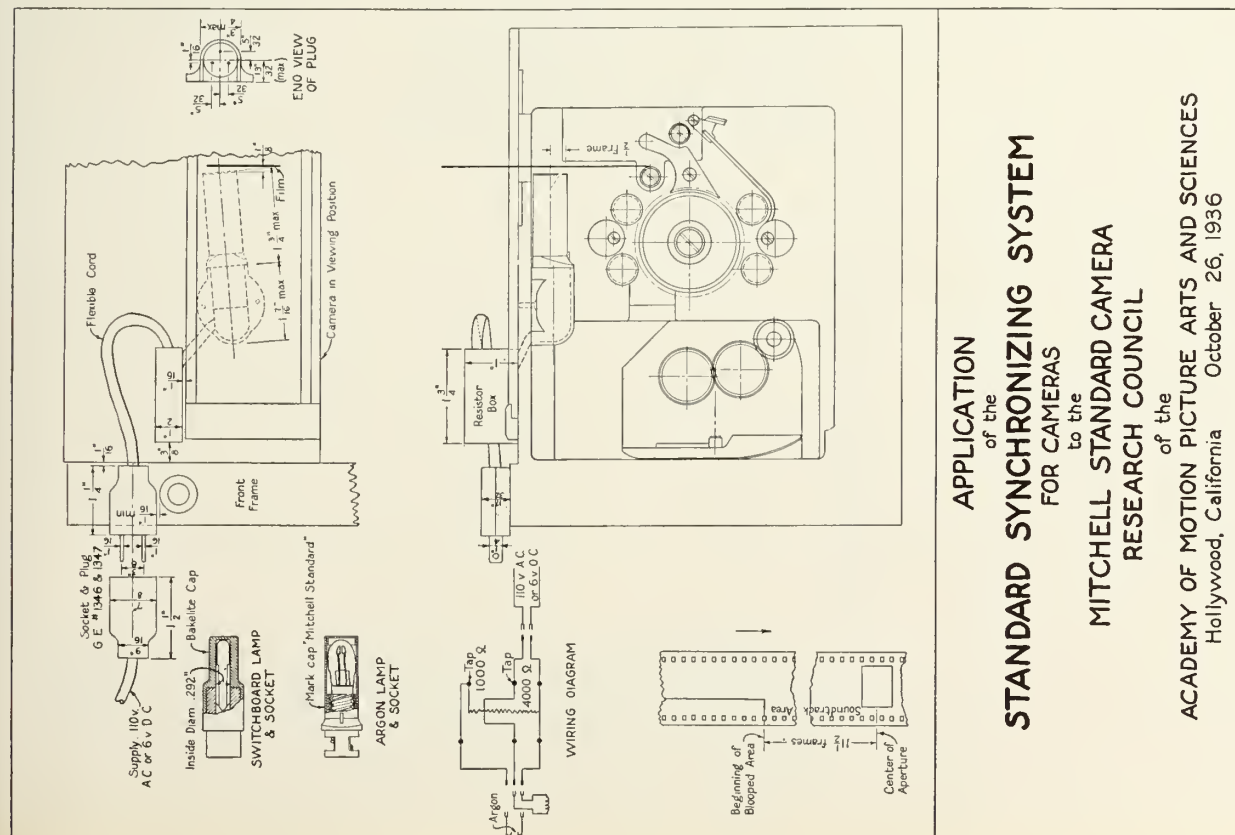
that either an argon vapor lamp and socket or a filament-type switchboard lamp and socket may be used interchangeably in any camera and/or any camera equipped with this standard synchronizing system may be connected into any studio power supply system with proper electrical characteristics, to provide a standard synchronizing mark upon the film.

In addition the individual items included in this



APPLICATION
of the
STANDARD SYNCHRONIZING SYSTEM
FOR CAMERAS
to the
MITCHELL N.C. CAMERA
RESEARCH COUNCIL
of the

ACADEMY OF MOTION PICTURE ARTS AND SCIENCES
Hollywood, California
October 26, 1936



APPLICATION
of the
STANDARD SYNCHRONIZING SYSTEM
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Hollywood, California
October 26, 1936

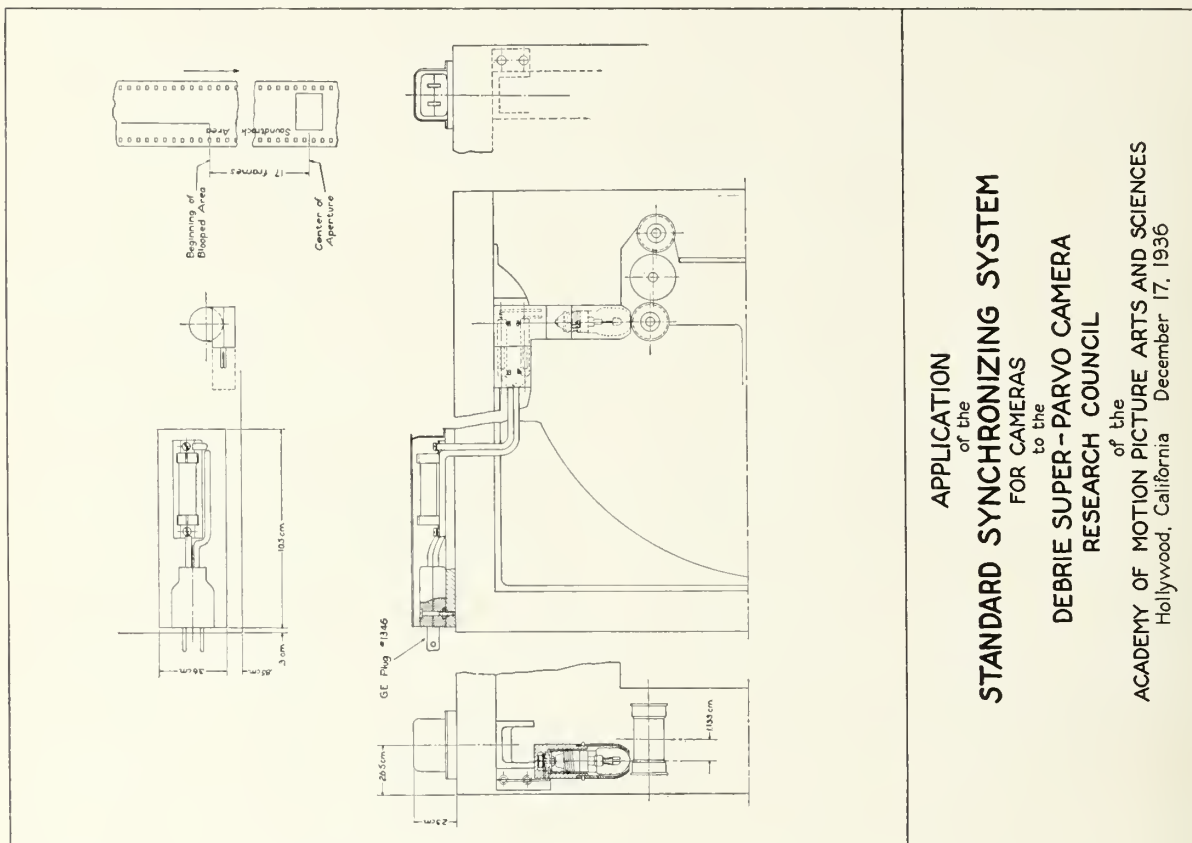
system have been chosen of dimensions and type which are inexpensive and commercially available (in some cases with slight modifications).

The System: The Standard Synchronizing System for Cameras shall consist of: (1) A standard plug of dimensions shown in the attached drawing entitled "Units of the Standard Synchronizing System for Cameras" and into which either an argon

tween the end of the lamp-and-socket assembly and the film.

The outside plug (General Electric No. 1346, or equivalent) shall be of maximum $1\frac{1}{4}$ " length, $\frac{7}{8}$ " width, $\frac{17}{32}$ " height with plugging elements $\frac{1}{16}$ " by $\frac{1}{4}$ " vertical dimensions, located $\frac{3}{8}$ " from center to center.

The outside socket (General Electric No. 1347, or



vapor lamp or a filament-type switchboard lamp with an appropriate socket will fit interchangeably, mounted inside the camera in such a position as to throw a beam of light on the film, positioned at a fixed distance from the center of the aperture; (2) external resistors of sufficient size and connected as shown in the attached drawing "Units of the Standard Synchronizing System for Cameras" to provide the proper current for either the argon vapor or filament-type switchboard lamp; (3) a standard General Electric No. 1346 (or equivalent) plug and an associated General Electric No. 1347 (or equivalent) socket through which the synchronizing lamps may be connected to either a 110 volt AC (for the argon vapor lamp) or a 6 volt DC (for the filament-type lamp) current supply.

Dimensions: The socket, into which an argon vapor or filament-type switchboard lamp will fit interchangeably shall be of fundamental dimensions shown in the attached drawing entitled "Units of the Standard Synchronizing System for Cameras" and shall be so located that there will be a clearance of not more than $\frac{3}{16}$ " or less than $\frac{1}{16}$ " be-

between the end of the lamp-and-socket assembly and the film.

Mounting: The synchronizing lamp socket shall be so mounted within the camera that a beam of light will be projected on to the film covering the sound track area and extending into the picture area.

The lamp and socket assembly shall be so positioned that the synchronizing mark shall be located at a point exactly $11\frac{1}{2}$ frames from the center of the camera aperture in the Mitchell NC and the Mitchell Standard cameras, and at a point exactly 17 frames from the center of the camera aperture in the DeBrie Super-Parvo cameras.

Note: Although not included as a part of these specifications, it is suggested that an outline of the film loop be etched on the camera wall to indicate the exact length of film with which the camera is to be threaded in order to accurately position the synchronizing mark.

OBITUARY

Harry Blanc, long a member of Local 659, passed on recently after a brief illness at his home in Hollywood. He is survived by his wife and near relatives. Deceased had been a successful stillman, with Larry Darmour for years, and his career had been a long and happy one. A large following of friends attended the obsequies.

My Third With the DeBrie

By EDWARD C. COLLINS
Assistant Cameraman, Twentieth
Century-Fox Studios

THE DeBrie camera, new to the people of the Hollywood studios, has caused considerable comment, pro and con.

The following comments are directed from the viewpoint of an assistant cameraman and, therefore, must necessarily show his own trials and problems.

Actual experience on production, where the cameraman must have dependable equipment to uphold his end of a mighty responsible position, is the answer to any new piece of photographic equipment.

Lucien Andriot first used the new DeBrie in photographing "Charlie Chan at the Opera," for Twentieth Century-Fox. As his assistant I found this camera slightly more complicated than the camera which I had been using

for nearly seven years. The threading of the camera, the lens set-up, and even the focusing apparatus were different. The first day's work was a nightmare to me. I can still remember hurrying to see the "rushes" for that day, hoping and praying that everything would be all right, hoping and praying that my seven years as an assistant cameraman had not been spent in vain.

As these scenes of the day unfolded before me, revealing the same type of realistic and beautiful work that Andriot had always done; the same definition that I have always received with the other camera, I heaved a sigh of relief and settled down to enjoy the balance of the "Dailies."

Throughout that picture I continually learned new and interesting things about the camera. One

of my most serious problems was to have the various lenses handy so I could make a lens switch without too much delay. To facilitate matters, the cabinet shop at the studio made me a lens box, which I hung on the rear of the camera dolly. I can now carry my complete set of lenses within reaching distance at all times, thus making lens changes very rapidly.

Another problem was that of focus. On the Twentieth Century-Fox camera set-up, the object to be focused and the focusing arm can be viewed without turning the head—just a slight movement of the eyes. But it is necessary to change the footage reading to correspond with the various lenses. Consequently each lens created a different throw on the arm to obtain the various footages. The longer focal length lens needed two and three footage segments, thus making it possible to obtain the full value of three feet to Inf. in one movement.

With the DeBrie, each and every lens can be moved from 2 ft. 6 in. to Inf. with one continuous movement of the dial. On the DeBrie one has to look from the object of focus to the footage marking on the side of the camera, thus necessitating a slight movement of the head. But to counterbalance this feature, the same set-up in the camera is so arranged that all the lenses are focused by the same footage reading.

For example, on a 100 mm. lens, the focusing knob is turned exactly the same distance between the various footages as on a 25 mm. lens. Thus by experience and practice one can "feel" his changes by watching the action and by a quick glance at the footage chart verify his judgment.

The camera carries 1,000 foot reels and requires very little more time than the others to load. In loading, a very clear view of the aperture and pressure plates can be obtained, thus making the important job of inspection very sure.

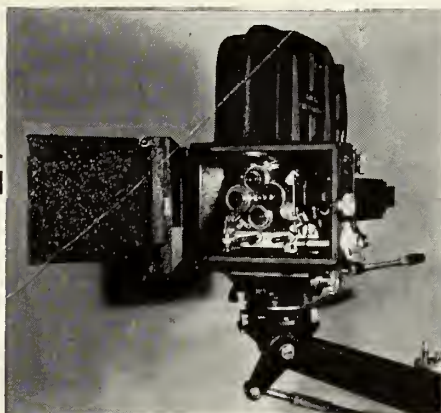
"On the Avenue," Dick Powell's latest picture for Twentieth Century-Fox, was the second triumph for DeBrie. And now Jim Tinning, under the photographic technique of Harry Jackson, is putting Sally Blane, Jane Darwell and the rest of a mighty fine cast through the paces in a mystery thriller which even the magic eye of the DeBrie cannot fathom.

Thus beginneth my THIRD with a DeBrie.

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An Introduction to Photography for Television

By HARRY R. LUBCKE

Director of Television of the Don Lee
Broadcasting System

THERE is a difference between producing motion picture film for the theatre and for television. The technical difference in the chain of operations from film to viewing screen in each case is the cause. Beautiful and artistic photography produced for the theatre is often detrimental to television presentations.

The reasons for this form the basis of a new technique of television photography. We have be-



What NOT to do. Scenes taken in violation of the requirements of television photography. Such dark exteriors or interiors, while telling a story on the theatre screen, are worthless in television presentations.

What to do. A scene taken in general agreement with the accompanying rules for television photography. This scene reproduces well over television.

come familiar with this technique in five years of television broadcasting, and we are glad to pass it on to those who may use it in their future work.

Rule number one is: **Do not violate the usual rules of photography.** Observe the old fundamentals of proper illumination, composition, contrast, and exposure in the absence of new instructions to the contrary. Do not, for instance, "shoot into the sun" on a newsreel assignment if you want the shot to be of any value in television. Do not, also, take a photograph of two dark gentlemen shoveling coal at midnight and expect to secure delineation on the television screen. The very dark scenes, still discernable on the theatre screen, become unintelligible over television.

Rule number two is: **Carry detail in the half-tones.** Paint the objects of principal interest in contrasting strokes but restrict these strokes to the central portion of the intensity curve. Fine detail in the very dark or the very light portions of a scene is usually lost.

Rule number three is: **Strive for "checkerboard contrast."** This is a happy combination in composition which makes the received scene stand out in artistic grandeur. There are various parts of bright intensity, of dark intensity, and of half-tones throughout the scene.

The principal objects are in contrast to the background. The several parts of each object are reproduced in different tones. The result is pleasing.

The undesirable opposite might be termed "agglomeration." The coal shoveling at midnight is one example; a dark foreground and a blank sky is another, of what not to do. The result is depressing.

Rule number four, and those which follow, apply to the laboratory as well as the photographer.

Rule four is: **Keep the overall gamma range small.** It is proper that the scene should vary greatly in tone throughout its area, but the extremes of this variation should be nominal. This is because

the television process tends to increase the overall contrast. Whites become whiter and black, blacker. The detail in the extremes is reduced, as mentioned.

Rule five is: **Furnish medium or light density prints.** The mechanisms that operate to obscure detail in dark portions of a scene act upon the whole scene if it is abnormally dark.

Rule six is: **Produce prints with black frame lines.** An opaque frame line, at least as wide as the old silent standard, and preferably as wide as the present sound standard, assists in the proper functioning of the television equipment. White frame lines are taboo.

Rule seven is: **Employ lap dissolves or quick fades in changing from scene to scene.** Long fade-outs give the impression that something has gone wrong with the television equipment. The screen does not go dark during a fade-out in television, as it does in the theatre. It remains at the average tone of the picture. The television process is carried out by causing this tone to become darker for the blacks and brighter for the whites.

The difference in television presentations made in accordance with these rules and in violation of them, is very great. The usual feature, newsreel, or short contains both properly and improperly photographed scenes, but often is consistently bad or consistently good, depending upon the star, the plot, the particular style of the cameraman, and the processing. Our several years of looking at television images now enables us to look at a print or a scene and tell at once whether it will be a good or a bad television subject, and in what respects.

TO EVERY NEWSREELER IN THE WORLD:





A Few Notes on Censorship

PART II

By EARL THEISEN

*Associate Editor
International
Photographer*

*Part II to be Concluded
in March*

SOME people must always censor something. If it is not one thing it is another. When the movies came along the censoring of movies began—after the film critics had a nourishing look at what was to be censored. Probably the first film to receive censor attention was the box-office smash of 1896. "The May Irwin-John C. Rice Kiss," a forty-foot production of that time which had for its theme just one long kiss and nothing more. The film wore out before the censors.

Another Edison film, "Dolorita's Passion Dance," an Americanized version of a North African dance, held the Kinetoscope slot machine customers spell-bound in delight. It was a dance of great daring and rolling of feminine muscles when viewed in the light of that archaic day. Letters poured into the Raff and Gammon offices, who were distributing the Edison film and peep-shows. "The authorities request us not to show the Houchi Kouchi. So please cancel order for new Dolorita."

In "The Chap Book," a magazine, the editor, Herbert S. Stone, took occasion to editorialize, in the issue of June 15, 1896:

"Now I want to smash the 'Vitascope.' The name of the thing in itself is a horror. Its manifestations are worse. The 'Vitascope,' be it known, is a sort of magic lantern which reproduces movement. Whole scenes are enacted on the screen. LaLoie dances, elevated trains come and go, and the thing is mechanically ingenious, and a pretty toy for that great child, the public. Its managers are not satisfied with this, however, and they bravely set out to eclipse in vulgarity all previous theatrical attempts." He was a censor.

After an editorial skirmish and flourish by the big Chicago papers, the city council of Chicago passed an ordinance of censorship on November 4, 1907. On November 18, that year the chief of police was authorized to issue permits. According to Terry Ramsaye this was the first legislation designed to control the morals of the movies.

Mayor George B. McClellan, of New York, received a report from Police Commissioner Bingham, on June 8, 1907, with the recommendation that the nickelodeon showhouses be wiped out. On December 23, 1908, he held a meeting to go into the subject of Sunday movies. After the meeting he left an order revoking the licenses of all five-cent picture houses in New York. William Fox and the other exhibitors of New York banded together and

had injunctions issued. When the storm finally cleared away, the only films that could be shown on Sunday were those of an educational character.

The People's Institute, who were interested in improving the morality of the screen rather than condemning film, in conjunction with the newly formed Motion Picture Patents Company, formed the National Board of Censorship early in 1909. In 1915 the name was changed to National Board of Review.

In 1908 after the national attention of the press due to the New York movies, San Francisco established censorship. In 1912 New York tried to enact censorship ordinances but encountered vetos by the mayor. Early in 1911 Pennsylvania enacted a censorship law by creating a board of "three residents and citizens of Pennsylvania, two males and one female," to pass on films. Kansas passed film laws in March, 1913, while Ohio followed in April. Maryland created a censorship board in 1916. New York State achieved censorship in 1921.

Reverend Wilbur Fisk Crafts in 1920 sent the following dispatch to the newspapers:

"Washington, Dec. 10.—The lobby of the International Reform Bureau, Dr. Wilbur Crafts presiding, voted tonight to rescue the motion pictures from the hands of the Devil and 500 un-Christian Jews. As the first step in removing the menace of the movies, Dr. Crafts told the reformers that he would appeal to the Catholic Church and that he would crash into Congress backed by the Christian Churches and reform organizations, etc."

Approximately 100 measures relative to censorship were introduced in thirty-seven states in 1921. In thirty-three of these states the measures were defeated. However, the industry was being involved in many scandals and disrepute. A very strict censorship which would have cost money was on the horizon.

The leading motion picture producers signed a round robin, under date of December 2, 1921, inviting Will Hays, then Postmaster General, to take control of the situation and "to have the industry accorded the consideration and dignity to which it is justly entitled and given proper representation before the people of the country." They told Hays that he would have a job; the compensation to be \$100,000 a year, under a three-year contract.

He decided to accept on December 25, and opened offices in March as the Motion Picture Producers and Distributors of America, Inc. He had been at the whitewashing job ever since. Now all countries, all the cities and states, all the hinterlands, and all the cranks send him their censorship regulations and from them he makes a code to which the producers religiously adhere. The film factories would no more think of releasing a film without first the Hays office approval than they would think of starting sausage factories.

The censors make it a strenuous business of guarding the public morals. The reports are a form of dignified horn-blowing.

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TH YEAR

MARCH, 1937

VOL. 9
No. 2



COLOR BY J. T. YOW

Hal Mohr, on the camera dolly, a well known ace cameraman at Universal, listens to a lecture on dramatics by Hal Mohr, distinguished moving picture director. Perhaps they are talking about "When Love Is Young."

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INTERNATIONAL PHOTOGRAPHER

MOTION PICTURE ARTS AND CRAFTS

VOL. 9

HOLLYWOOD, MARCH, 1937

No. 2

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CONTENTS

Front Cover by SHERMAN CLARK

Frontispiece by HARRY BLANC

THE HOP-A-LONG CASSIDY SERIES	- - - - -	3
MAKING HISTORY WITH CINECOLOR	- - - - -	4
<i>By Howard C. Brown</i>		
BUCK JONES	- - - - -	5
A FEW NOTES ON CENSORSHIP	- - - - -	6
<i>By Earl Theisen</i>		
DUPLEX SUPER CAMERA	- - - - -	7
PICTURE RESEARCH VARIATIONS	- - - - -	8
<i>By Frances Carey Richardson</i>		
IN CINECAMERAFORNIA	- - - - -	9
PERSPECTIVE—PART V	- - - - -	10
<i>By Lewis W. Physioc</i>		
"RIVER OVER MY DOOR!"	- - - - -	12
<i>By Red Felbinger</i>		
WHAT AND WHY IS "LAB" TEST?	- - - - -	14
<i>By Pete Parnell</i>		
A NEW EQUIPMENT ORGANIZATION	- - - - -	15
LET'S GO CANDID	- - - - -	16 & 17
<i>By Karl A. Barleben, Jr., F.R.P.S.</i>		
AMATEUR MOVIE SECTION:		
<i>Edited by F. Hamilton Riddel</i>		
Talkies on 16 mm. Film—a Success—Part I	- - - - -	18 & 19
<i>By A. P. Hollis</i>		
Right Off the Reel	- - - - -	20
Questions and Answers	- - - - -	21
Cine Tidings	- - - - -	21
SCHEIBE'S EFFECT FILTERS	- - - - -	23
CINEMATOGRAPHER'S BOOK OF TABLES	- - - - -	24 & 25
<i>By Fred Westerberg</i>		
CRIMINAL INVESTIGATION	- - - - -	26
NEWSREELISTS GO SURREALIST	- - - - -	27
<i>By Warren McGrath</i>		
MOTION PICTURE PRODUCTION IN SOUTH AMERICA	- - - - -	29
<i>By John Alton</i>		
NEW TEAGUE WALKING DEVICE	- - - - -	31
<i>By Roger Broggi</i>		
TELEVISION	- - - - -	31
HOLLYWOOD OFF STAGE	- - - - -	32
<i>By Earl Theisen</i>		

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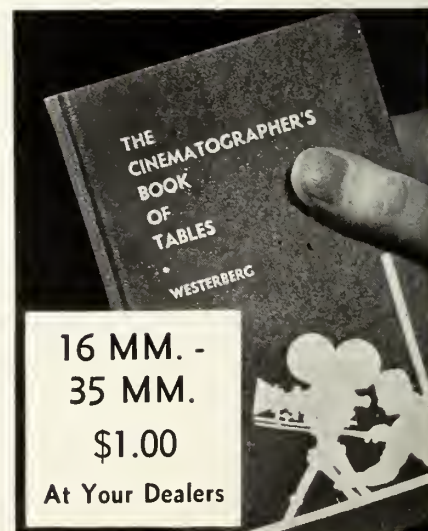


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Archie Stout

Rated by one of the national trade papers as one of the top specialists in exterior photography, Archie Stout, veteran ace cameraman who is responsible for the striking pictorial beauty in the current Hop-Along-Cassidy westerns which Harry Sherman is producing for Paramount and which features William Boyd and James Ellison, shares this credit with his crew and the producer.

Important members of Stout's camera crew include Hop-Along Harlan, Harry Merlin, Perry Finerman and James Moore, all of whom have been with Stout in the filming of the Hop-Along Cassidy series.

Stout attributes the ultimate success and photographic accomplishments shown in the Hop-Along series to the enthusiasm of his camera crew and the free hand given him by Sherman, the producer.

"The fact that Sherman is not content with the hoof-worn hills of Hollywood, Newhall and Saugus for his locations," says Stout, "and seeks virgin locations in the High Sierras and other relatively inaccessible mountain and desert spots from four to six hundred miles away from Hollywood, gives us values in the wild, primitive beauty of the old West, the scenic results secured more than compensate for the added production costs involved.

"Today with high speed transportation and good highways, it is only a matter of hours before cast, crew and equipment can be out where there are plenty of wide-open spaces picturesque and un-

changed, where mere trails discourage the motorist and where a horse is still man's best friend," continued Stout. "With backgrounds such as these it is easier to create a scenic illusion that plays an important part in story telling and adds to the feel of realism for audiences. The great open spaces become visual and awe-inspiring to audiences who spend most of their lives within the confines of a given community and to them the scenic beauty aids in carrying them away with the screen players as they ride and fight in visual action of the days of the old West."

"Much credit," says Stout, "is due Harry Sherman, the producer, for his far-sightedness and belief in scenic beauty in westerns and his courage in attempting to bring to the screen the better type westerns with natural backgrounds that make the Hop-Alongs vital, alive and real."

In photographing this popular western series, Stout has succeeded in capturing not only the wild, primitive beauty of the out-doors but in sequences where story stress menaces a symbolic background of gnarled trees, jagged rocks, and other grotesque forms of nature of sinister appearance to aid in emphasizing pictorially menace.

Stout, a native son, born in Bishop, Calif., has spent much of his idle time fishing, hunting and camping in out of the way spots all over the coastal mountain ranges and in this manner has become familiar with the true beauties of the West.

California Leads in Motion Picture Industry

California, the leading State in the motion picture industry, contributed 23,179 or 84.5 per cent of the total number of employees and \$165,064,504 or 87.6 per cent, to the total cost of production, according to figures received by Walter Measday, District Manager of the local Bureau of Foreign and Domestic Commerce, from the Bureau of the Census.

The number of establishments in California for 1935 were 75, compared with 39 for 1933 and 58 for 1929. The number of establishments in Los Angeles County for 1935 were 75, compared with 39 for 1933 and 52 for 1929. The number of establishments in the City of Los Angeles for 1935 were 51 compared with 28 in 1933 and 45 in 1929; the remainder of the area reported 24 in 1935 against 11 in 1933 and 7 in 1929.

The number of persons engaged at the studios

in California for 1935 were 23,179 against 16,417 for 1933 and 15,169 for 1929; Los Angeles County 23,179 in 1935 against 16,417 in 1933 and 15,153 in 1929; City of Los Angeles 12,203 for 1935 against 9,696 for 1933 and 9,327 for 1929; remainder of area 10,976 for 1935 and 6,721 for 1933 and 5,827 for 1929.

Both employment and production in the motion picture industry showed pronounced increases in 1935, as compared with 1933. The number of persons employed in the motion picture productions in 1935, a total of 27,417, represented an increase of 44 per cent over 19,037 reported for 1933, and their compensation in 1935, \$101,754,426, exceeded the 1933 figure, \$71,343,941, by 42.6 per cent. The total cost of work done last year on finished and unfinished productions was \$188,469,660 or 57.9 per cent above the corresponding figure, \$119,342,866, reported for 1933.

Making History With Cinecolor

By HOWARD C. BROWN

AS recently as March, 1932, there existed no organization known as Cinecolor. At that time the company had not even been contemplated. And yet, in less than five years the Cinecolor process has reached a stage in its development that indicates an important future in the motion picture industry.

If one were to ask the majority of those engaged in the picture business, if they had ever heard of Cinecolor, the answers would be no. Judged by the usual Hollywood requirements this would be a most depressing condition. However, in this instance the apparent lack of publicity has a most interesting explanation.

If you are a picture executive or better still, if you have the right kind of "contacts" you have probably been approached many times during the last ten years by an "inventor" of a new color process. If by chance you are one of those unfortunates who invested their money in such an enterprise you are undoubtedly sadder but much wiser. For although at this writing there are nearly one hundred different color processes throughout the world, those that have proven of commercial value and have also shown consistent earnings can be counted on the thumb of one hand.

Realizing the necessity of facing this unfortunate and sometimes unsavory record of color promotion, Cinecolor decided that it would refrain from all kinds of publicity until such time as it has proven the commercial practicability of its process.

During the first two and one-half years of its short history, Cinecolor's chief chemical purchase was undoubtedly, red ink, for the management was determined that regardless of time and expense, the first objective was to establish a consistent quality of good color.

With a definite goal in mind the engineers and chemists set to work and after many long months of research and experimentation, which were quietly undertaken, Cinecolor developed its process to a point where it felt confident a small quantity of satisfactory color prints could be delivered at a reasonable price.

When this position was reached a number of small accounts were accepted and with this business Cine-

color began to function as a manufacturing color laboratory.

With prints to deliver and customers to satisfy the management was cognizant that now, more than ever, Cinecolor must constantly strive to increase the value of its process. To achieve this end it was decided that the company should have the largest and best equipped research department obtainable. Immediate steps were taken to put this policy into operation by engaging a number of experienced graduate chemists.

This strategy brought forth dividends, for soon the quality of the color prints began to show even further improvement. The method of processing was simplified and the percentage of loss began a gradual decline. Both of these factors contributed to increased, unsolicited business until the company began to add major producers and distributors to its list of customers.

When, about a year ago, Cinecolor began to enjoy near capacity operation it would seem that that was the time to publicize the color process. And again the management refrained, but this time, however, it was for a far different reason than originally.

Cinecolor, at its inception, formed the unmistakable opinion that a color company, to be successful should be a manufacturing company and nothing else. It should not attempt to tell a potential customer how to make pictures or run his business. Neither should it insist upon compulsory contracts and other contributing facts that create ill will in place of good will. The company resolved to devote itself solely and exclusively to the processing of color positive prints of an interesting quality and a decreasing price. With this objective Cinecolor

felt it was doing all that the motion picture industry required or desired.

Consequently, the company specialized in making color prints from color separation negatives and left the manufacture and development of color sensitive negatives to those best qualified, such as the DuPont and Eastman companies.

As the only color separation negative available for use with standard black and white cameras was bipack, the Cinecolor process originated as a so-called two-color process utilizing the Dupak negative.

With the experience gained from continual use of this negative together with the cooperation and technical facilities of the DuPont organization, the Dupak negative was improved to a point where its selectivity and sensitivity reached near perfection. As this negative improved in quality it gave the Cinecolor research department the opportunity of making further changes and adjustments in the positive color process with the resultant rendition of a wider range of colors until the entire spectrum was approximated.

Approaching the ultimate in two-color photography and having a highly efficient research department, Cinecolor began to direct its efforts toward the development of a three-color printing process and the adaptation of a new single coated positive film for release print work.

With this research work nearing completion and with an imposing list of customers such as Warner Bros. and Paramount, who are each making several series of pictures in Cinecolor, the company began to outline plans for the erection of a new and modern film plant in which could be installed the company's latest developments and where, too, under these facilities color



High Water in Southern France—By Robert C. Bruce in "Camera Secrets of Hollywood."

prints could be turned out in great quantity.

So, after a number of years of quiet but consistent progress there will soon be erected in Los Angeles a modern

film laboratory devoted exclusively to the processing of color prints. When this building program gets under way there will be seen for the first time, consistent institutional announcements

to the effect that the producers of motion pictures will have available an inexpensive color process that can be authentically described as the New Cinecolor.

Motion Picture Industry Advances in 1936

(From Bulletin, United States Department of Commerce)

With the close of 1936 the motion picture industry of the United States was in the best position that it has occupied since the boom year of 1929, according to Nathan D. Golden, Chief, Motion Picture Section, Bureau of Foreign and Domestic Commerce.

Approximately 500 feature pictures were produced by the industry during the year at a cost of \$135,000,000, an increase of \$10,000,000 as compared with 1935. The increased cost of production, Mr. Golden stated, is attributed by the industry to the better class of pictures produced and to the increased wages and salaries paid to the studio personnel.

About 500 theatres were constructed or reconditioned during the year at a cost of \$27,000,000, thus further increasing the \$2,000,000,000 previously invested in the industry. Some of the theatres reopened during the year have been closed for so long as fifteen years, Mr. Golden stated.

The prime factors in the reopening of theatres during the year was the increased availability of money occasioned by the steadily advancing economic improvement within the United States and the better quality pictures which were produced and exhibited, according to Mr. Golden.

Box office records for the year evidence that better quality pictures attract additional patronage

for motion picture theatres. During the year just closed 88,000,000 admissions weekly to motion picture theatres were accounted for, an increase of 10 per cent on a national scale compared with 1935 with the increase in certain sections being recorded as high as 30 per cent, Mr. Golden stated.

The increased patronage would evidence that gross revenues received for admission to motion picture theatres during 1936 again reached the \$1,000,000,000 mark for the first time since 1929, it was stated.

With general economic improvement within the United States continuing at the present rate coupled with the production of high quality pictures which have been scheduled by the producing companies, there is every indication of increasingly larger patronage at motion picture theatres in this country during the current year, according to Mr. Golden.

The industry is looking forward to a year of prosperity. This anticipation is based upon the favorable financial position of many companies as disclosed by the 1936 profit and loss statements, the firm belief that the national economic recovery is gaining momentum, and the fact that the industry is being capably directed along the lines of good business management, according to Mr. Golden.

Buck Jones Leads the Western Stars

Buck Jones' newest western, "Smoke Tree Range," has just been completed, with Muriel Evans as leading woman,



Buck Jones and his skipper at sea.

who has supported Mr. Jones in his last four western features.

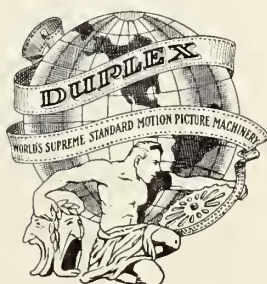
Allan Thomas acted as first cinematographer and the staff was completed with Dave Kesson and Roy Ivy, with Art Marion, famous stillman, at the snap-shot cameras. The picture was only one day over schedule notwith-

standing the terrific weather.

Of Buck Jones and his work Edwin Schallert, *L. A. Times* critic, wrote recently: "Victorious leader among the western stars year after year is Buck (Charles) Jones, whose income is said to average \$5000 a week. Not only does he act in eight pictures annually, and play in a serial besides, but he frequently writes and nearly always edits his screen product, and furthermore gets a big return from gadgets and

what-nots that are exploited with his name.

"Jones is on the screen in certain theatres approximately twenty-eight weeks in the year by virtue of the combination of serial and features. When one type of film isn't running the other is. His pictures reputedly cost \$35,000 to \$50,000 apiece, and gross up close to \$150,000 at times. What's more, he's been just such a leader for a number of years."



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A Few Notes on Censorship

PART III

By EARL THEISEN

Associate Editor International Photographer

Even so censors continued. In the Motion Picture Daily of January 20, 1932, is "Since the organization of the Motion Picture Commission in 1921 (referring to New York's censor board) receipts of the board totaled \$1,991,724.66 up to June 30, 1931, according to the annual report of Dr. James Wingate, head of the motion picture division of the State Education Department. The entire amount expended during this period, including salaries, was \$796,538.60, giving the state more than \$1,000,000 profit since the board was organized."

The Pennsylvania Legislature appropriated \$180,000 to cover salaries and expenses for the censors for the biennium ending June 1, 1933. This board, by the way, is the most active and the scissoring in some instances is most unusual.

In 1932 Virginia reported a profit of \$10,000 from its censor board. In Maryland the film surgeons viewed 4,738 miles of film with a profit of \$35,245.00, according to the report for the fiscal year ending December 30, 1931.

In the Motion Picture Daily of October 7, 1932, is the news item stating in regard to Virginia State Censors that: "The state board made eliminations from 74 of the 1,618 films examined. A total of 282 eliminations were made; 200 fewer than were made in the previous year. Four films were rejected in entirety. The state made a profit of \$9,715.58 from licensing and other sources of censor revenue."

Covering the fiscal year of July 1, 1930, to June 30, 1931, Albany, New York, made a total of 3,031 censor eliminations, and fourteen were rejected in entirety. Of this number of eliminations, 1,687 scenes were snipped for such reasons as 26 were sacrilegious, 1,165 tended to corrupt morals, 1,129 tended to incite crime, 243 were inhuman, and 468 were indecent. Four inspectors did this work, according to a report issued by Dr. James Wingate.

In 1935 showmen in New Orleans had to pay \$4.25 a thousand feet to have films censored. Ohio boosted its censor fees 400 per cent. A charge of \$2.00 a reel was made in Kansas in 1931, and 4,812 reels were viewed.

If all censor bans were collated and put into effect the industry would be making films for the deaf and dumb. No udders of cows may be shown in Mickey Mouse films. American films are too capitalistic for Russia. Hungarians eliminated a dust cloud from a film because it suggested that

Hungarian roads might be dusty. They did not want dust to get into the tourists' eyes. Political situations that have a controversial element are out in Ireland and England. Militaristic films are not wanted in the Orient. Drinking scenes, rough scenes, depravity and such are out in the Malay Straits. The films entering Singapore, Java, or the East Indies must be handled in accordance with the viewpoints of the natives so that white prestige is not endangered. In other words, the treatment of the film must be made to be dignified to the native eyes for reasons of maintaining order by the authorities. In Scandinavian countries, no sequence dealing with crime where the criminal escapes justice may be shown. No religious ceremonies may be shown in England, even to weddings. They feel that the films may not express the proper reverence of such ceremonies. Gangster films are out in Italy. England will permit no showing of cruelty to animals, regardless of film. If a horse, for example, falls in a film and does not get up the scene must come out. Kissing is limited to three seconds in Ireland, while kissing is not shown in the Orient, because to them it is distasteful. Bathroom and bedroom scenes are eliminated in Ireland. In 1931 in Pennsylvania the kissing had to be done in an upright position.

Taboo words—Bumped off, punk, in your hat, finger (unless used in a marriage ceremony), frog, when applied to a Frenchman, as are wop, yid, hun, greaser, chink, spik, alley cat, bloody, sex appeal, skirt, guts, fairy, nance, mistress, chippie, courtesan, eunuch, floozy, nerts, nuts and louse, are among a few. The birdie or Bronx cheer are also taboo. Gigolo is censored in England. A woman is not a "bag" nor a "bat."

No film in which Jewish writers or directors participated may be shown in Germany. Irving Berlin songs in connection with films are eliminated.

Because "Sissy" means swishy in England, "The Devil Is a Sissy" became "The Devil Is a Softy" in that country.

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The camera is small and compact, very light in weight, and may be used as a hand camera when necessary—the ideal camera for newsreel work and expeditions where weight is a factor and, according to the manufacturer, dependable and practically fool-proof.

The new Duplex Camera primarily was designed for color work, to take care of two negatives, with pilot pin registration and perfect contact for both negatives, insuring the sharpness

so absolutely essential in color work, where color separation in negatives

properly exposed insures good results on positive.

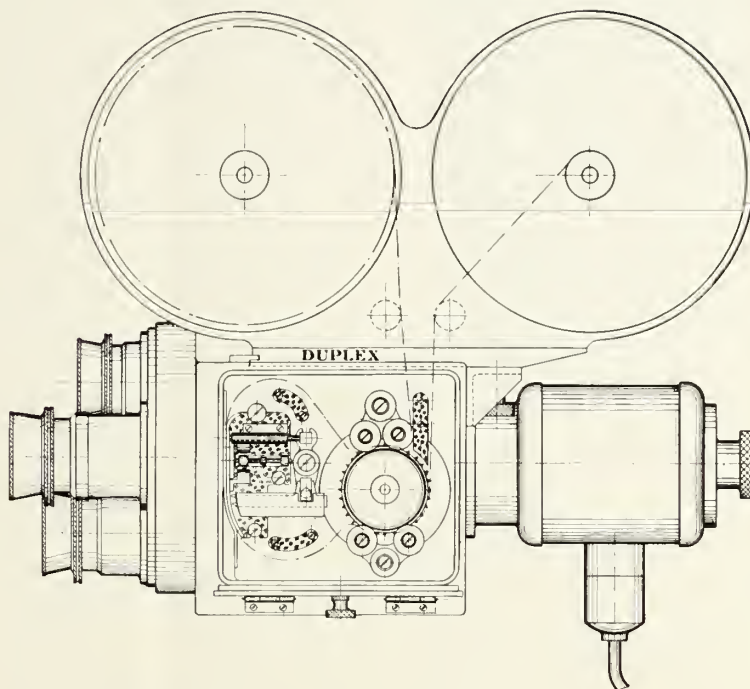
Another feature is the dissolving shutter with an opening of 250 degrees, permitting the cameraman to work under adverse lighting conditions, or better still, eliminating some of the excessive lighting so hard on the eyes of the actors.

This camera is so designed as to lend itself to perfect black and white photography, having an upright view finder and magnification for insuring correct focus.

It appears this new camera has quite a few advantages. Being simple and easy to get ready for shooting and easy of operation, the cameraman need spend little time for setting up or getting ready. The footage set-back counter is easily read and convenient to reset.

The Duplex people, who will be well remembered as original and outstanding in the manufacture of various types of cine machinery, consider the Duplex Super Camera really worthy of the title and they state there is no known camera on the market today embodying the features included in this one.

Mr. Carleton explained that the low price of nine hundred dollars was made possible through long experience in the designing and building of precision tools, which insures uniformity of all parts and long life for the camera.



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Picture Research—Variations

By FRANCES CARY RICHARDSON

Research Department—20th Century-Fox

There is a certain point of view necessary to a research worker. Not to be dramatic—although we've a right to in our business—but it is a sort of "never say die" attitude. One must always assume there is still another place to seek for one's information. If you don't have that attitude it is forced upon you. When a stickler arises you are deluged with advice, "have you tried so and so?" or "did you call such and such a place?" is asked by those desirous of an answer. If you have called you assume a somewhat bored expression and say, nonchalantly: "Oh! yes, of course," as though it were quite the most evident place to try—as it usually is. If you have not called the suggested person or place, you feel mightily chagrined that you didn't think of it and do so at once.

Of course, I am speaking now, about information that is not available in books, and the ordinary channels of research. Things sometimes sound so easy to find and are quite difficult.

For instance a set dresser needed information regarding old fashioned dress models to dress a shop window in the fifties, for "Dimples." We got in touch with a firm in that business and found a woman in charge whose father before her had been in the same business, and who was kind enough to let us borrow pictures of some very old models.

A frantic wire sent to a firm which had been making musical instruments for eighty-five years, asking the type and appearance of an harmonica of that period brought us a quantity of data on the subject.

Sometimes, I fear the police department gets a trifle discouraged with our persistent inquiries into their methods and procedure, but if drama is a portrayal of life, the policeman surely plays considerable part in it. For a cop always seems to put in an appearance in every story somewhere, if only to direct traffic or give someone a ticket. Fingerprinting plays a part in so many pictures. How much can a finger print go through without being destroyed? Well it all depends of course, but I find through the fingerprint Division that they may even be submerged in water and still be usable. The Narcotic Squad tells us that dope sometimes is found in packages 4 or

5 inches square, and that morphine is more costly and bulkier than opium.

Someone should go through the country collecting pictures of policemen and jails, of sheriffs and deputy sheriffs; of their offices, their license plates, and their insignia. Now we even have to know what they say when they give out calls over the radio in different places.

It gets to be a sort of mania, this research business—for when on a vacation trip, one finds it most difficult to pass a jail in a small town without stopping to inquire if any picture of it is available, and if the sheriff has a spare badge to give you to add to the reference collection and just whether it is the proper thing in this part of the world for a man holding a sheriff's office to have any other remunerative work, or if the constable wears a uniform all the time or only on state occasions.

Once we had quite a siege with different types of wooden legs. We had a very clever art director who got an idea that a certain character who wore a wooden leg should have a number of them to use upon different occasions. Of course we descended upon the manufacturer of such things. We searched the books of pirates and the life of Peter Stuyvesant and other famous men who had had the misfortune to lose a

limb and finally ended up with a really varied assortment.

For one of Shirley Temple's pictures, the director decided there must be dialogue for an added scene in which a coast guard boat was overtaking a tug-boat and demanded it to stand still and let the coast-guard officer come aboard. Now to find out the exact terminology used in such a case one must go straight to headquarters, so the Coast Guard Station was called. After much explanation of exactly what was to take place—the director was at last satisfied with about a dozen lines of dialogue that successfully brought the government ship alongside the suspected tug and delivered the coast-guard men aboard her. Of course, it was but a flash in the finished picture, but if it had been wrong we would surely have heard from it.

A diamond cutter's establishment opened its doors to us for "Maiden Lane," and our photographer made a number of shots of the various machines and methods used in that delicate business, which we made good use of.

There are few places that escape us! Not long ago we called a bartender for a good stiff drink—by phone. We wanted one that had knockout ingredients as well as a fiery name—a combination of Singaree and a corpse re-



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In Cinecameraforia

George Blaisdell Moves Up

George Blaisdell (there's only one), formerly editor of several New York trade magazines of other days and more recently an editor of INTERNATIONAL PHOTOGRAPHER, has been chosen editor of the American Cinematographer, monthly publication of The American Society of Cinematographers.

Mr. Blaisdell is a printer and editor of the highest standing and his acquaintance is very large both in the east and west.

He succeeds Charles Ver Halen, for several years editor of the American Cinematographer, who has engaged in

other publications featuring amateur photography.

Paul Park, chief cinematographer of Index of American Design Federal Art Project, 2404 W. 7th St., Los Angeles, Calif., has received from Co-ordinator C. A. Glassgold, "compliments for his extremely fine work—clear, well composed and honest."

Mr. Park is loaned to the Federal Art Index Project and his associates are Nelson H. Partridge, Jr., State Director for Southern California, and Warren W. Lemmon, Supervisor.



viver . . . was at last decided upon.

For "Seventh Heaven," another bartender told us how to serve absinthe.

It is wonderful when one considers the more or less unlikely places one may find any answer one is seeking. Someone wanted to know once whether gas was used as illumination in Russian Theatres in 1875. After looking in various and sundry most probable places our success, the life of Chaliapin occurred to me as a possibility. I still cherish a warm feeling of gratitude for him because he relates in his autobiography, how he always remembered the smell of the gas lights when he thought of his first visit to the theatre.

Once we needed a model of the "Iron Maiden of Germany." The original was a nice little torture idea of the middle ages—an iron figure of a woman the size of a human being. She could be opened and inside were long spikes extending from front to back and as a punishment for misdeeds, the unfortunate sinner was placed within the figure. The "maiden" closed upon him with the spikes being in just the correct positions to pierce him through.

As I was saying, we needed a model of this maiden. Pictures and minute descriptions had been found but none would suffice—our director must see an actual model of the thing. We were at a loss—when two men walked into the department who were connected with a local steamship agency. Very facetiously, I said, "Good morning! Please have you a model of an iron maiden?" "Why," replied one of them, the boss has one on his desk; it opens and shows the spikes inside—he got it abroad last year!" Needless to say we arranged to borrow it. But miracles do happen—(we like to think it is intuition!)

The foregoing are of course simply incidents but each picture presents a different problem—a different method of attack. This is true chiefly of stories laid in foreign countries and in times past. One doesn't think of McKinley for instance as being so very long ago and yet so much has transpired in the last thirty-seven years, that a picture laid in his time is an historical production. Such a one is: "This Is My Affair." A period like this one so near

our own time that a great many now living were part of it, is sometimes more difficult to handle than one distinctly in the past. No one really remembers what happened in the 18th Century but the latter part of the 19th is a different matter. We have had to be very sure that McKinley's glasses were correct and of how Theodore Roosevelt looked when he was vice-president. We must make no mistakes about the appearance of McKinley's office or the White House of the time. The White House servants must be correctly uniformed and the custom of the time in addressing a letter to the president must be checked. Samples of newspapers and magazines of the period are procured for reproduction. The telephone company of Washington, D. C. at our request sends a photostatic copy of a telephone book of the period and the police departments of various cities are again asked to search in their files for pictures of ancient uniforms. The costumes of the period are quite entrancing—the heyday of the Gibson girl. The political

(Turn to Page 28)



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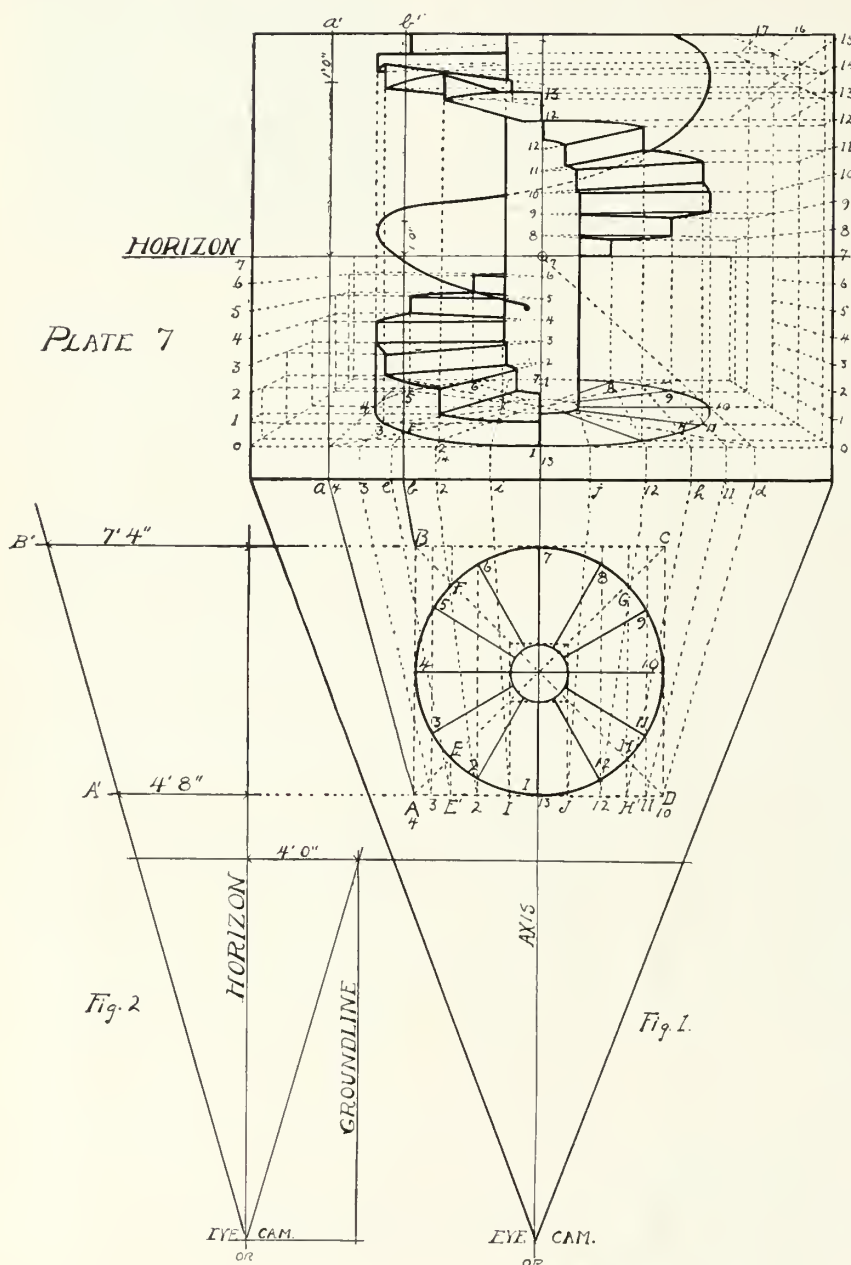
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PERSPECTIVE

INSTALLMENT V

By LEWIS W. PHYSIOC



too deep nor too shallow. Next, the correct pointing off of the plan of the steps in that perspective circle.

And if the student should experience difficulty in finding that much talked of second vanishing point in the simpler problems, fancy the job of determining the individual point for each of those many steps—the eccentric shapes of the treads, the converging direction of the risers, the curved ends, and the diminishing measurements of each step as it recedes from the eye—on, around the circle, and then returning to the nearest position.

The early systems of perspective were concerned with the laborious process of determining those various points and measurements. The new system requires only the necessary care in tracing projected lines to their proper intersections. Every line represents a relative point on the ground plan—both the simple plan and the perspective plan.

OPERATION: Plate 7, Fig. 1, shows a plan of the winding stairway, with twelve steps completing the circle, the thirteenth beginning the second series. The dimensions are a matter of design, and the number of steps and the height of risers are controlled, of course, by the construction specifications. In the present exercise, the diameter of the circle is eight feet, the center radial support is two feet diameter, the risers are seven inches. In projecting a circle in perspective, it is necessary to construct a square about the circle, A,B,C,D next, bisect the square from these points (corner to corner).

The intersection of these diagonals with the circle furnishes the important points E,F,G,H. Next, divide the

It has always been the ambition of students of perspective to lay out the spiral stairway. To execute this problem accurately, with no "faking" is not an easy task, and most draughtsmen become disgusted and discouraged before they get beyond the ground plan.

The difficulties become apparent when we study the construction of this ever-winding, ever-changing direction of the steps. First, there is the matter of finding the proper perspective position of the ground plan—not too near nor too far away; not

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circle into the number of steps required. Number the outside points of the steps, 1-12. Project parallel lines through points 5-3, 6-2, 8-12 and 9-11, and the center support down to the base of the square A-D. Extend the points A, 3, E', 2, I, 1, J, 12, H' up to the base of the sketch, using the eye (or camera) as the radial point, establishing a, 3, e, 2, i, 1, j, 12, h, 11 d. Elevate the solid lines, a-a', b-b'.

Next, lay out the elevation angles as shown at Fig. 2, to the left. In this instance the horizon is four feet from the ground. The angle is that of the motion picture frame, three-quarters of the horizon angle. When a drawing is made for the eye, these angles are assumed, according to artistic judgment.

Extend, horizontally, A-D and B-C to A' and B', on the vertical angle, Fig. 2. Measure the distance between A' and the horizon and B' and the horizon. In our present study, these figures are, respectively, 7' 4" and 4' 8", with a scale of $\frac{1}{2}$ inch = 1 foot.

Now, reverting to the horizontal problem, Fig. 1, divide the solid line b-b' into 7-4/12 parts; take 4 parts—equal to 4 feet, and point off this distance below the horizon. This establishes the farthest position of the square in perspective. Divide the solid line a-a' into 4-8/12 parts; take 4 of

these parts, equal to 4 feet, and extend this distance below the horizon. This gives the nearest position of the square, and its correct distance from the ground line of the picture.

By converging these points to the center of the tiny circle, at the intersection of the horizon and the axis, gives the correct perspective inclination of the square and likewise proves the points ticked off on lines a-a' and b-b'.

Extend points e and h to the perspective base of the square, and then converge them at the vanishing point on the horizon; this, by way of comment, is the only vanishing point we find necessary. Where these converging lines intersect the diagonals (from corner to corner) furnish the important points E, F, G, H.

By describing a curved line so that it intersects E, F, G, H, and the near and far points of the square and the axis, represents the entire circle in proper perspective, in perspective.

The next important move is to extend the steps numbers 3, 2, 12 and 11 (at the base of the sketch) to the near side of the perspective square. Then converge them to the vanishing point. Where the points intersect the perspective circle, furnish the points 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13.

Now by converging these points at

the center of the perspective circle, we complete the entire plan of the steps in perspective.

We must now find the elevated positions of these points and their diminishing dimensions as they recede around the circle. On the sides of the sketch, point off the heights of the risers. For the sake of simplicity we have made the risers a fraction under 7 inches, a multiple of the horizon—48 inches, the seventh step being the height of the horizon. These may be set all on one side. And for convenience, we set them on the sides according as they represent the steps nearest. At the left: 1 to 7 are shown converging to the vanishing point, and intersect with horizontals extended from points of relative values on the perspective plan. By constructing a series of steps, as shown by the dotted lines, at the left, we determine the relative position of those on the plan. Thus, by laying the edge of the T square at No. 1 and tracing across the axis, we determine the height and edge of the first and nearest step, as shown by the heavy line. Next, place the edge of the T square at the bottom of No. 2 and trace across the upright running from 2 on the perspective plan; then trace from the top of No. 2, across to the same line, and establish the top of the second step, as

(Turn to Page 30)

SUPER PARVO CAMERAS

were used to
Photograph

"On the Avenue"

Fox Twentieth
Century
Production



Left to right: Second assistant director, Charles O'Mally; first assistant director, William Skully; second cameraman, Eddie Fitzgerald; director of photography, Lucien Andriot; make-up, Ben Nye; director, Roy del Ruth; assistant cameraman, Eddie Collins; second cameraman (hidden) Harry Webb; assistant cameraman, Roger Shearman.

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New York

"River Over My Door!"

By RED FELBINGER, Local 666

(Editor's Note: The newsreel cameraman referred to in this graphic eyewitness story was Emile Montemurro, staff cameraman for Fox Movietone News, Chicago office.)

THIS is a saga of water . . . the big water of '37 . . . or as I have seen, and am told, the biggest flood in the history of the river . . . it is also a saga of the biggest army of lens snoopers ever mobilized in boots to tell the tale, pictorially.

I sit here in my room with two other men assigned to the big flood. One is an old vet from my class . . . the other is an older vet from a generation past. The older one is sitting at the phone . . . he is calling his New York editor and explaining what he has shot today. He doesn't sound like a newsreeler of my generation but more like a newspaper "leg-man" . . . as he sounds off a list of scenes that he has made this day and has just shipped by the quickest way out of this water-soaked community.

This man has not been on a news assignment in many a year . . . but here is a picture of an oldtimer . . . not a picture of a man coming back . . . but a picture to prove "once a newsreel man, always a newsreel man" . . . he is taking particular delight in outlining his day's material to the big boss . . . all he talks about is the stuff "in the can" and on its way to New York . . . what he is not talking about is how he got the stuff and under what conditions.

There are three of us in this hotel . . . we have no water with which to bathe . . . shave . . . or perhaps even wash our faces in . . . we have no clean linen . . . for drinking purposes we have managed to cajol a quart of the worst "Cookin' whiskey" that ever came out of the Kentucky Hills over the river . . . with some special water for "wash" purposes. I said "special water" . . . the label on the bottle discloses, "exceptionally fine for gout and rheumatic pains" . . . not that we have these ailments but drinking water is at a premium and one cannot be too particular here. So we down a few shots of the "cookin' whiskey." We do so because we can use them . . . We have just come off of the "River" . . . and it is that trip on the River that the old timer forgot to mention over the line to the big boss at New York.

It's been a big long day . . . the water is lashing over the second floor stage of business buildings and homes . . . a twenty mile an hour current is flowing down stream . . . carrying complete houses in its path . . . destruction is on a rampage . . . and in the wake of this roaring torrent rides the biggest newsreel army in history . . . men are



spotted from Pittsburgh all the way down to Memphis . . . every angle is being recorded on celluloid . . . and it is a rare treat to be thrown in, once in a while, with a few brother competitors on this story of the big water of '37 . . . Traveling alone and unaccounted for, days at a time . . . no warm meals . . . no regular means of transportation . . . it's a big story and it's gotta be got . . . therefore it's like being with the home folks, when one meets another pal, out there on this water . . . We three were thrown together today by chance meeting at an intersection where the coast guard was launching rescue boats to proceed on missions of mercy back to the deep waters . . . We three were thrown together in the same coast guard boat and made the long tedious trip up stream to record the havoc of the old devil River . . . house tops floated by the coast guard cutter plentifully . . . whole towns were submerged . . . houseboats were tied to roof tops, blocks back from the main stream . . . gas tanks were upset . . . churches and schools were submerged . . . occasionally we passed other coast

guard cutters carrying Red Cross workers and refugees . . . It was as impressive a sight as it was pitiful . . . Words cannot describe the desolation and havoc of the power of the Old River as it assumes and asserts its supremacy over man . . . but the newsreel cameras keep on grinding . . . the boys are out there along the entire stretch and breadth of the River . . . their pictures will tell a far more powerful tale than the printed word is going to convey . . . these are thoughts running through my mind as we move along . . . I make a few scenes here and there . . . sometimes I watch as the other two grind away . . . we have not had any lunch this day . . . and not more than a cup of coffee for breakfast . . . it is now four p. m. . . . We ask the skipper when he intends to turn back . . . we have pictures . . . but pictures do no good unless you can get them off to New York . . . the skipper does not know . . . perhaps we will tie up somewhere out in this sea of desolation all night . . . so here we are stuck . . . God, if we only had a drink of water . . . water all around but not one drop fit for drinking purposes . . . finally we spot two coast cutters coming down stream . . . we arrange a transfer . . . the story must be shipped . . . We are making good time now downstream . . . on the cutter we have transferred to . . . the Cincinnati skyline is looming up ahead . . . a few more good shots . . . we are grinding away . . . the boat hits the whirlpools near the big bridge . . . a sudden lurch of the boat throws the newsreeler next to me into the drink . . . all but the ankle of one leg, which is pinned beneath his Akeley camera which has fallen top of him . . . the skipper swerves the boat, while another guard throws the throttle of the engine . . . the newsreeler is submerged . . . two of us have pinned his leg down with the camera . . . a coast guard hauls away trying to get him back into the boat . . . if we lose hold of him he is gone . . . whirlpools

(Turn to Page 22)



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EASTMAN *SUPER X*
PANCHROMATIC NEGATIVE

What and Why Is a "Lab" Test?

By PETE PARNELL

Which simple query involves an answer revolving around a procedure that has been in use since the infancy of camera technique and yet one that has been so taken for granted that the importance of its function has become slightly dimmed and a matter of course event not living up to its purpose.

A stranger on a studio set would be in total ignorance at the finishing of a scene at the multitude of voices aroused at the cry: "Test, test, let's get a test!" and wonder at the importance of the reason behind so much excitement.

Well might he wonder. It would not be amiss to state that many of the actual workers who have been listening to that same cry for years are as much in the dark as he—that they do not know its exact purpose and importance, that in some cases, judging from the behavior of some of the actors, which this is all about, do not care enough to co-operate, thereby thwarting the very purpose the cameraman is striving for.

To define a lab test is necessary. It is made for the very important purpose of giving the best possible treatment in the developing solutions of the laboratory to the negative *after* the cameraman has imbedded in the sensitive film emulsion the combined efforts of directors and actors, lighting effects and lens exposures, chosen as best by the cameramen.

It should be an exact exposure counterpart of the most important lighting effect and action of that particular scene or set-up. It should not vary one fraction from that ideal. Too often it does with misleading results and the blame is variable.

In most cases the test is merely a repetition at the end of a scene of the previous combination of lighting and exposure, with the actors in a "still" pose, the film being exposed from ten to twenty feet, a notch punched between the good scene and the test, or notched on end and so marked on camera reports and film cans for the negative developer in the laboratory, with complete description as to effects and intent cameraman sought. Sometimes, under stress, tests are made at the beginning of a scene and should always be so designated. This is ideal. It is not always attained.

To a few studio laboratories (in the minority) all of this fuss and bother about tests are meaningless. They do not use them. The sad part of which is that besides not being able to correct slight and sometimes injudicious exposures, the laboratory's negative standard suffers and flexibility of printing technique is hampered.

To the laboratories who do develop by the test strip method, thereby exerting greater control over the cameraman's results, with possible correction of the evils of exposure that befall him frequently, *the test strip is the all* as to what the result will be on the screen for the particular scene for which it was made. If that strip is false and no notification is given to the man in charge of negative developing, the corresponding scene is likewise false and the exposure and lighting suffer.

In the first case of the laboratory using no tests all development is standardized. The negative solution is supposedly kept from day to day at a uniform strength, quality, temperature, contrast, and developing speed and a "set" speed of development is maintained constantly. It might be ten, eleven or twelve minutes for a certain emulsion type. Whatever it is, it remains constant and if the cameraman is a wizard, after he once gets his exposures adjusted to the negative solution, his work is consistent with the best that that particular developing system will give.

Printing results, however, show otherwise. The cameraman is not consistently good or bad. If he over-exposes his negative suffers from over development, too high control, added grain size, bleached out gradation, general hardness, etc.

If he under-exposes and the developing time is not the maximum of which the solution is capable, his film suffers from flatness or "mush," as it is often referred to, and he has no rich velvety blacks, blended gradations or clean brilliant highlights.

In the first case the printing density of the heavy negative may exceed the limits of the printing machine unless unusual extremes are taken to make correction. In the second, the thin negative is printed so low on the scale

that when a negative is referred to as printing down around three, five or seven, under most laboratory processing conditions this implies the kind of "mushy" negative it is.

The second method, however, where test strips are turned in shows great improvement, both in laboratory printing technique and the ultimate of quality derived from the exposed negative. This in turn created a cycle of satisfaction at the photographic results obtained. The producer is pleased(?), the star is pleased, the "gaffer" is pleased, the cameraman is pleased(???), and the laboratory continues to function as a nonentity somewhere on the lot, that in times of especial need is highly important.

This is where the importance of the test strips is manifest.

The cameraman sets up for a certain sequence and to follow the mood of the script a certain mode of lighting is desired to further the emotional intent of the scene.

Possibly a fully lighted room is suddenly darkened with weird effect. The greater footage of the two opposites in lighting should be the prevailing one given as a test. If the low-keyed mystery lighting prevails, or if the scene is totally low-keyed, the test should be synonymous with that tone and instructions to that effect given the negative developer so that he will not try to destroy the effect by "forcing" in the developer. Naturally in most cases he should be a man of anticipation and know what the intent has been, but sometimes small infractions of exposure will raise the level of such a scene and it will be natural for him to make something other of it than was intended.

If that same scene has full lighting predominating the scene's length, a fully lighted test should be given with corresponding instructions and when the lights are dimmed the drop-off should be so balanced as to take care of itself.

This leads to a subject in itself and it is enough to say here that balance in mood lighting, balance of high-lite and shadow lighting with the corresponding correct scale of pleasing half-tones is solely in the lap of the cameraman (or his gaffer if he so wills)

and no laboratory effort possible can change that relationship.

The quality and degree of softness can be altered to a certain extent, but the *negative developer can not* turn cameraman and make his solutions do what the latter has failed to do. And too many times such expectation is the current attitude of cameramen who have reached the sublime pinnacle of having nothing more to learn regarding exposure and co-operation with the laboratory.

Often stars of prominence (and temperament) fail to co-operate with the cameraman. Possibly he is working on a large close-up involving delicate balance with spotlights, backlights, or what have you, where a 6-inch movement makes all the difference between a test in extreme shadow or a hot highlight when a nice balance had obtained during the scene. When called for a test if the star gets just a bit impatient, is non-understanding or just temperamental and does not co-operate fully as to position, etc., the cameraman is compelled to take his test under those adverse conditions. Unless he is interested enough himself to hie himself to the laboratory personally, or by some message inform the man in charge that such and such condition existed and give some kind of hint as to how to balance scene or

A New Equipment Organization



Kruse Camera Rental, 1033 No. Cahuenga, has opened its doors to handle a full line of motion picture camera equipment and Mr. Henry Kruse, manager, announces that on the

first day the business was flattering. The equipment includes turn-tables, dollies, blimps, N. C. Mitchells and no end of other camera supplies are coming up.

Mr. Kruse needs no introduction to the studios of Hollywood nor to cameramen nor to users of camera equipment and he is popular, reliable and alert. He and his associates are filling a long felt want and the INTERNA-



TIONAL PHOTOGRAPHER wishes them no end of success.

possibly to ignore it and play it along with a scene test nearly identical, the laboratory is going to use its own judgment. It will be played either for the hot spot and developing time shortened, or prolonged according to the shadow exposure and in either case he will be slightly wrong. A midway point would have been correct and the quality retained. Either of the other two ways destroys the original quality. Worse, if he has other set-ups or sequences on that same roll with only one test for it, the best has not been made of that roll of film representing such concentrated wealth and activity, which, after all, ends with the O.K.—take of each scene and is the consummation of many months' preparation and the investment of many thousands of dollars. And the laboratory being the last in line will, as usual, take the blame gracefully and say nothing.

Stand-ins should never replace principals in close-ups where matters of lighting are important (and they always are), as differences in make-up, facial characteristics, etc., are important. The star's make-up might be several shades softer than the stand-in's, who will reflect the light back more contrastily, the negative developer will soften down that sequence to match possible others and thereby under-soften finished result. Or the effect may be just the opposite.

In long-shot sequences such substitution is permissible where distance creates a sense of illusion rather than a barefaced photographic portrayal; but where the negative man's judgment rests upon the choice of facial characteristic and degree of lighting it's very, very bad for the cameraman, the star and everyone concerned.

Again, it is very wrong, about quit-

ting time, for the star to whisk out the door and for the prop man or electrician to stand in just so a test is given the laboratory. He has no make-up, no anything in common, and if there happens to be 500 or 1,000 feet of O.K. takes on that same roll, it's just too bad. And after all, it is the star who does not look so well on the screen and the cameraman's name on the credit title does not do *him* too much good.

Tests should not be too short. Motor speeds should be at their maximum, otherwise the slower speed makes for an over-exposed condition that is false and were it to be the criterion used, the scene for which it was intended would be under developed. Enough footage is very essential.

Extreme changes of lighting and differing sequences on the same roll should be notched and explained on the camera report. Failure in this again does no one any good, and the notches should actually be *there*, instead of just marked on the report and forgotten by the assistant.

Many no-test rolls come into the laboratory. They are not marked as run-outs, they show on the report as being O.K. takes, thus preventing the taking therefrom of a test, and the best the laboratory can do is to try and match camera card with others of like scene and take-numbers and develop accordingly. If it be an entirely new sequence with differing numbers there is no guide left except the guess and hope system, which is never too good.

If for any reason tests have been made on opposite ends of rolls contrary to custom they should be so indicated on reports. Run-outs should

(Turn to Page 28)

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"On the air!" Karl A. Barleben during a WHN broadcast. No, he's not singing; merely talking.

—photograph by
Ivan Dmitri

CANDID photography, surprisingly enough, doesn't seem to be so candid lately. In other words, few photographs today hold any charm or value unless they are candid. Notice the advertisements in the magazines . . . nine out of ten are of the strictly candid type. To illustrate, not long ago, fashion pictures were carefully posed in elaborate commercial studios, fitted with all the trimmings. The results usually looked posed; which, of course, they were. Now we see in the same ads pure, unadulterated candid pix; no more posed, strained stuff. The manufacturers of dresses, furs, hats, coats and similar apparel these days show you their wares on models, it is true, but walking along New York's Fifth Avenue or Park Avenue. You can see that the photograph is definitely not a posed one. The cameraman merely took his models on the street and had them walk up and down a favorable block while he snapped them many times. On developing the film, the best picture was selected, blown up and surrounded with copy and sent to the engraver. You see the result in your favorite magazine. It is now as simple as that.

Candid photography has invaded almost every other type of work, and most naturally, the amateur photographer, no matter how many cameras he may possess, just has to have a candid camera for his own personal candid shootings. This candid camera business has its good points, and it may be said that it has revolutionized the public's taste for pictures. Magazines such as *Life*, *Coronet*, *Look* and a host of others which use many photographs in each issue have quite definitely shown that we all like pictures. To go along with this, our appreciation of good pictures has, accordingly, been stepped up so that now, poor re-

sults don't get by, where a few years back they might have been accepted generally. So photography moves on.

It has been generally conceded that Dr. Eric Salomon and Dr. Paul Wolff, both of Germany, were among the first to popularize so-called candid photography some years back. *Life* magazine, in a recent issue, showed some actual photographs of a candid nature made by a Frenchman, Paul Nadar, many years before the time of Salomon and Wolff. We shan't quarrel about such a trifle, however, for it is enough that candid pictures now belong to the world.

The candid camera is, strictly speaking, one which can be quickly and easily operated. One which is small and compact, and is usually fitted with a speed lens. One which enables the user to snap pictures of unsuspecting victims. Until about a year ago a good candid camera (referring of course to miniature cameras) cost from one hundred dollars and up . . . mostly up. Then along came a man by the name of Verschoor who knew merchandising and saw possibilities in a small, miniature camera which could be produced at a low price. He cast about and made inquiries, and finally evolved what we today know as the Argus Candid Camera. It sells for twelve-fifty . . . an heretofore unheard of price for a good camera. Nevertheless, Verschoor's ideas were correct, and today the Argus camera is owned by many thousands of individuals who couldn't possibly afford the more costly instruments. Even now, I suspect that the Argus factory cannot turn out enough cameras to supply the demand!

In the meantime the Contax and Leica cameras continue on their merry way, piling up new sales records in spite of their high price. They, of course, cater to a specific market, consisting of people of means. That there is likewise a market for inexpensive cameras of the miniature type can be seen in the fact that, along with the Argus, there are other outfits costing not more than twenty-five dollars. There is, for instance, the Midget Marvel to be considered in this class. And all along the price range you will find other models. The Eastman Kodak Retina, the Super Baldina, the Robot; all are representatives of cameras using standard 35 mm. motion picture film.

One of the interesting side-roads of candid photography, as far as the ama-

LET'S G

By KARL A.



Scenes from Earl Carroll's Sketch Book: Left, stage photograph made during actual performance. Center, a close-up. Lens, 90 focus. Exposure, 1/20 second. Film, DuPont Superior. Right,

teur is concerned, is the shooting of stage presentations and radio broadcasts. Perhaps there is a direct appeal in this work for the layman, for it often enables him to get "behind the scenes," as it were. As a matter of fact, candid camera contests were quite the thing a year or so back, and prizes were offered for the best pictures produced. While today these contests are not so publicized, they do, nevertheless, exist here and there. To *The Camera* magazine, I believe, goes the credit for starting the candid camera contest movement, at least in New York City. *The Camera* also instituted the radio broadcast contest for the "Eno Crime Clues" programs, originating in Station WJZ, in Radio City, New York. Some of the work produced at these and other contest nights was of a high order, indeed.

During my six months as director of the "Behind the Lens" program for Station WHN, Morris Germain, A.R.S.P., "covered" my programs candidly with his miniature. He often took along a chap who owned a Speed Graphic and a synchro-flash outfit. It was during those programs that candid cameraing sort of got into my hair, for it is somewhat distracting to have Photoflash lamps flare up in your face and hear all sorts of clicks



CANDID

R., F.R.P.S.

Ivan Dmitri, famous candid cameraman, broadcasting from station WHN in New York City, as guest of Karl A. Barleben. Photo by Gene Lester.



Shot from sixth row, using a miniature camera fitted with 73mm, f:1.9 lens. Exposure, 1/40 second on DuPont Superior panchromatic. All photographed by Karl A. Barleben, Jr.

and bangs as shutters are released while you are on the air. However, I have a collection of prized candid shots of those days, and now they seem to be worth all the agony I endured while they were being made.

A few hints may not be amiss at this time concerning this sort of work, for I've received many requests for information on the matter. The first and foremost consideration is illumination. Both stage and radio studios are, as a rule, poorly lighted . . . that is, poorly from a photographic standpoint. This means that the candid camera must be equipped with a fast lens . . . at least f:2 . . . and the film should be of the Agfa Superpan, Defender X-F or Eastman Super-X variety. Even at that, hypersensitizing must often be resorted to in order to secure passable images. In case you don't know, film can be increased in speed by what is known as hypersensitizing . . . exposing the unexposed film to an ammonia bath or ammonia fumes . . . and using as soon after as possible. The ammonia solution used is usually a two to four per cent solution, and the film is left in it for three to four minutes. The initial speed of the film is ordinarily increased to about twice, but unfortunately it drops back to its original

speed rather quickly . . . within a few days or a week.

It's silly to hypersensitize film at home, because all the leading film manufacturers will supply film already hypersensitized on special order. Watch for grain, though, with hypersensitized materials. The grain cannot be said to be fine grain after the process. Also, if the film cannot be used immediately, keep it in the refrigerator, for it seems to keep better in a cold condition.

Stage shots are simple if you are lucky. That is to say, everything depends upon your position in the audience. With the usual two-inch focus lens, you'll have to be in at least the first three rows, otherwise your images will be so tiny as to be hard to recognize. Photoflash lamps are naturally out of the question in the theatre, unless you wish to risk the "bum's rush." Usually the lighting will be sufficient to make exposures at about 1/10 to 1/25 second. Naturally, the faster the lens the better the results.

Don't try to make pictures in a theatre during the performance without the permission of the management. Managers just don't like that sort of thing . . . nor do those who happen to be seated in your vicinity. It is always better, and often easy, to se-

cure permission first. Don't ever try to crash a burlesque performance with a camera. Kip Ross has done it and gotten away with it . . . by the skin of his teeth. Some few unfortunates have been actually caught red-handed, and it is too bad what happened to their cameras, to say nothing of their persons. In this work, politeness, fairness and common sense are far more important than a few pictures, so never take chances of killing fellow cameraists' chances and at the same time subjecting yourself to humiliations.

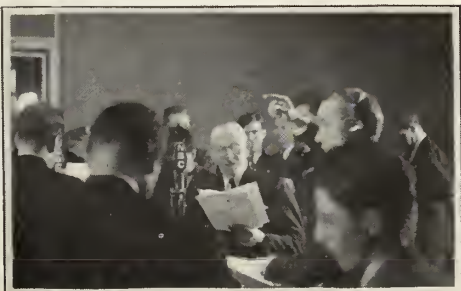
Radio broadcasting is a little different, although here again the conditions are about the same as those met with in stage photography. Permission is necessary . . . and how . . . and only a few chosen on the "inside" are given freedom of the studios. So much is at stake, you see. Noise of any kind will pass through the microphones like nobody's business and kill a program, temporarily, at least. Conditions are a bit easier, and larger cameras, fitted with Photoflash units can be worked with good effects. Most of the hangers-on in studios use Speed Graphics fitted with either Kalart or Mendelsohn flashguns.

A knowledge of radio technique and the studio "sign language" is of great importance to the photographer, for things are done somewhat differently in radio than on the stage. The slightest scrape of a chair, the audible click of a loud shutter, the crumpling of paper; all will be picked up by the microphones, especially if they are of the "billiard ball" type which has been used quite a bit lately in progressive studios.

The shooting of pictures during an actual broadcast is a bit difficult and trying. It is far more satisfactory if you can get the action you want during one of the rehearsals, for then greater freedom of movement is permitted. Rarely are good pictures made during the program while it is on the air, although it has been done. Gene Lester of WHN has made many such pictures of personalities, but it was a case of "have to" or else, in order to get the desired results.

(Turn to Page 24)

Left, thrilling moment during one of the Eno Crime Clues programs. Center, Spencer Dean, man-hunter, rehearsing in studios of WJZ in Radio City. Right: The Eno Crime Clues program is one of the few shows on the air where the director remains in studio wearing earphone. Shown with hand in air. Photographed by Karl A. Barleben, Jr.



AMATEUR^{movie} SECTION

Edited by F. Hamilton Riddel

"TALKIES" ON 16 MM. FILM—A SUCCESS

Part I

By A. P. HOLLIS

Author "Motion Pictures for Instruction"

FACTS march on, most impudently, and trample theories underfoot. Back in 1930 we were loath to acknowledge that sound could be photographed on a strip of 35 mm. film, and reproduced in a movie projector. But it happened gloriously, and banished forever the clumsy attempts at synchronizing with phonograph records. For many years the new "talkies" remained the supreme possession of the theatres.

eliminating the sprocket holes on one side of the film.

Thus, "strange as it seems," the 16 mm. sound film reproduction is not so far from the sound quality of the 35 mm. as might have been expected—and schools, business firms, etc., using the smaller sound units, find that they can have a complete talkie unit—projector, loud speaker, and amplifier, small and light enough to be carried in two suitcases, and with both sound and picture indistinguishable by the ordinary person from regular theatre performances.

I think I will be pardoned for referring in this discussion to the machines with which I am most familiar—namely, the DeVry line. It goes without saying, that other firms are producing also, widely used apparatus of this character, and teachers and business firms contemplating the use of 16 mm. sound equipment should investigate the whole field, secure demonstrations of the various types, and select what they regard as the best for their purpose.

New "Professional" Steadiness to the Picture

In 1935 another advance in 16 mm. projection was announced by Herman



A 16 mm. "Talkie" Equipment Being Operated in a School Room by a Student.

Advent of 16 mm. Sound-on-Film

Then, as usual, the amateurs began to cry for it—but were told that a sound strip could never be *photographed* on the narrow space left at the side of the tiny picture on a 16 mm. film. However, the film makers produced a finer grain emulsion, and it was also found that the small 16 mm. film could be run through a projector successfully using perforations along one side of the film only, instead of the two sets of perforations required in the larger 35 mm. film. This left space for the sound track almost as wide as that of the 35 mm. film.

As shown in Figure 1, I have placed a 35mm strip of sound film, (variable density), flat on its face and marked off the perforations, sound track, etc. Directly under it I have placed a strip of 16mm. sound film in such a way that one edge of the sound track coincides with one edge of the track of the 35mm. film.

The difference in width of the two sound tracks can scarcely be seen with the naked eye. It appears as a fine white line at the left of the 16 mm. sound track. The actual difference as laid down by S. M. P. E. is the difference between .100 of an inch and .080—which is .020—about the thickness of a piece of very thin cardboard.

There is, however, a very considerable difference in the vertical dimensions of the markings on the two tracks due to the reduction in area. The diagram shows that at least so far as width of track is concerned, there is very little difference. This extra width as explained before, was gained by



Fig. 1

A. DeVry, Inc. In that year DeVry succeeded in doing something in the

16 mm. field thought impossible or at least prohibitive so far as the cost was concerned. That was incorporating in a 16 mm. projector the sprocket inter-

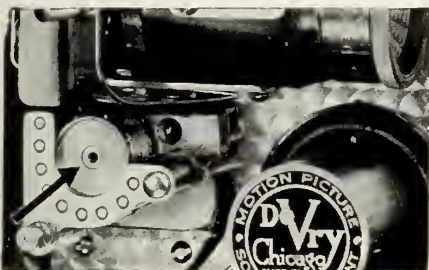


Fig. 2

mittent or rotary movement, the original form being universally used now as "The Geneva Movement" in all professional projectors. In the illustration, Figure 2, the arrow points to the sprocket intermittent, the first ever to be successfully incorporated in a 16 mm. machine.

While such an improvement has very little of the sensational about it, it is nevertheless fundamental and far-reaching, and lifts 16 mm. projection to a new high projection level, see Figure 3. The reasons given by the theatres for abandoning the claw movement are equally potent for the 16 mm. machines, wherever continuous projection periods are used, comparable to the theatres.

These reasons are:

1. The claw is an up and down, in and out movement, illustrated in Figure 4, exerting sudden pulls upon the perforations that inevitably lead to torn sprocket holes, whereas, the rotary sprocket turns the teeth gradually into the perforations, without strain on the perforations themselves.

2. The claw movement is inherently a "jerky" movement, whereas the sprocket rotary movement is smooth

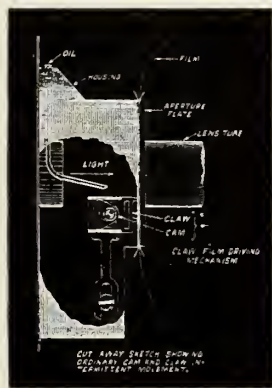


Fig. 4

and steady, the resulting screen image reflecting these characteristics.

3. The claw is a punch press job easily and cheaply made, whereas the sprocket intermittent is a deeply involved engineering accomplishment, requiring hardened steel of the finest

quality and the highest degree of skilled workmanship for the necessary machining. The new DeVry Sprocket Intermittent movement costs ten times as much to manufacture as the claw.

In fact the main reasons that this obvious improvement has not been applied to 16 mm. machines before are simply:

1. The cost.

2. The engineering knowledge and skill required to make a sprocket intermittent that would work efficiently in the smaller space.

In addition, the new movement machinery outlasts many times that of the claw, making replacements unnecessary; and it saves film—by reducing wear and tear on the perforations.

Some Claw Movement Machines Have Been Greatly Improved

It must not be inferred, however,

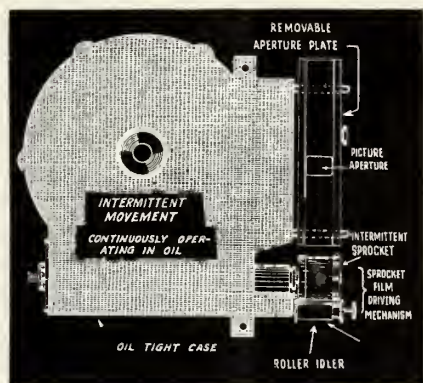


Fig. 3

that we regard all claw movement projectors as obsolete because I have stated they are no longer the best. The *multiple claw* is easier on the film than the *single claw* movement. That is, when two or more prongs pull on the perforations simultaneously, the strain on each hole is lessened, the wear on the film is decreased, and the movement is "smoothed out" to that extent.

Other construction elements, like roller bearing idlers, vibration filter wheels, reduction of gears and working parts—improved lighting and sound elements may be so combined as to enable claw movement sound projectors to handle sound films in a very satisfactory manner for years.

Illumination Doubled

The perfection of 750 and 1000 watt special projection lamps for 16 mm. projection by General Electric was another important factor in the amazing development of 16 mm. sound units.

These are pre-focused lamps and have bi-plane filaments, and when properly cooled by ventilating fans, etc., project clear images of nearly theatre screen size. If in addition a scientifically determined optical system

is furnished exactly matched to the lamp filament—screen illumination is fully equal to that used in theatres of moderate size. Such an optical system includes the reflector, a condenser of such prescription as to utilize the greatest possible degree of illumination from the given light source, and a projection lens of maximum diameter and optical perfection.

As I wrote this W. A. Aschmann, a motion picture equipment dealer, arrived from Milwaukee, and showed me this letter:

TOSA THEATRE

North Avenue at 69th, Wauwatosa, Wis.
(Member Independent Theatre's Protective Assoc.)

January 15, 1937.

Dear Mr. Aschmann:

You may be interested in knowing the uses I am making of the DeVry 16 mm. Camera and 16 mm. Sprocket Intermittent Projector in a regular theatre show. Every week I shoot about 100 feet of 16 mm. silent film, making pictures of interest locally, and showing them on my screen under the title of "Tosa Theatre Newsreel," following my regular newsreel. I do this by setting your 16 mm. projector in the booth alongside my theatre projector. I lay out a story which I narrate on my Tosa newsreel through a microphone from the booth. The 100 feet of silent 16 mm. film occupies about as much running time as one-third of a 35 mm. sound reel.

When I switch from the regular newsreel to my "Tosa Theatre" 16 mm. newsreel, I, myself, can scarcely notice any difference in the projection, and the audience never knows but what the "Tosa" newsreel is being projected with the same machine as the balance of the program.

When you told me that your 16 mm. projector could throw a satisfactory picture on the screen of my theatre, which is 17 feet wide and 98 feet from the booth, I was naturally skeptical, but the results have exceeded my fondest expectations, and I am happy to tell you that when you claim your Sprocket Intermittent 16 mm. Projector will fill demands made of a theatre projector, you are not exaggerating a bit.

Sincerely yours,

(Signed) ROSS J. BALDWIN.

Which seems made to order to corroborate what we have been saying about this 16 mm. rise in power.

There remains to consider the *Sound Mechanisms* of the 16 mm. units as compared with those of the 35 mm.

It can be said at the outset that the Sound Mechanisms are the same as for 35 mm. film and are practically just as good. These sound elements are three, depicted in Figure 5:

1. The Sound Head.

This consists of

- (1) The exciter lamp. (Two of these are shown in the casing at the bottom of the illustration.)

- (2) The exciter lamp lens tube (shown above the lamp casing).

- (3) The sound slit and drum (above the tube).

(Turn to Page 20)

RIGHT OFF THE REEL

Typical Topics for the Amateur

Smooth Projector Gate—While no sort of regular lubricant is in order for the gate of a movie projector, there's a variant which seems to do nicely. Thoroughly clean and dust off the film gate, aperture and side tracks. On the raised tracks of the gate, on which ride the perforations of a film in its passage through the projection machine, rub some ordinary paraffin. Not too much; just a slight coating. This treatment on the gate tracks assures a smooth-working projector gate.

Note for 8 mm. Users—Because regular 8 mm. film is run twice through the camera, users making experimental tests with 8 mm. positive stock may become confused as to "which end of the film is which." There is a simple remedy for this dilemma. Before loading up your 8 mm. camera, cut the beginning of the film into the shape of an arrow; and at the end of the film strip, cut a "v"-notch. Thus, the respective ends of the film are easily identified.

Steady Camera—A great deal of the illusion of motion in your movies is lost if the pictures appear "jumpy" on the screen. The subject should move—not the background, in most takes. There really is no substitute for a good tripod, when you get right down to cases, yet it is common today to find amateurs shunning the use of this "old reliable" of movie making. Obviously, then, it is earnestly recommended that careful study be made of the camera manual, furnished with your particular make of camera, as to the best manner in which to steady your camera during exposures. Like learning the use of a typewriter—there's a right way and a wrong way to start out. In movie making it's most important that you use the correct way.

Adding Human Interest—So often, it happens, when amateur movie makers indulge in making a nature scenic, they entirely overlook human interest. Expansive panoramas of beautiful natural color or filtered black and white scenes parade across the screen—vistas

of inspiring beauty, no doubt—but with no living soul in the shots! We don't mean you must have the foreground cluttered up with people in all your scenes. But there is no reason why some human interest cannot be added, some person may not appear in some significant bit of action, against the background of your scenic shots. Do this—and watch your films become more interesting.

Night Shots—Charm of the unusual is no better depicted than in the night photographs contained in Dr. Walther Heering's new book, "Night Photography." Although the book deals with "still" photography, much of the informative data it contains is applicable to cinematography as well. Certainly, the illustrations are worthy of every movie maker's study, for they are suggestive indeed of the interesting possibilities in cine night shots. Cine amateurs possessing fast lenses and using super-pan film will be able to secure in night shots a reel of fascinating and novel subject matter.

TALKIES ON 16MM FILM A SUCCESS

(Continued from Page 19)

GOERZ

PRECISION...

In every step of lens manufacture, Goerz Precision is evident. In the careful selection of the raw material, in the meticulous grinding and polishing, in the critical supervision of each detail, in the final, rigorous testing—this precision holds—and affords to users of Goerz Lenses an unequivocal and unconditional guarantee of their quality and performance.

Kino-Hypar $f/2.7$ and $f/3$; Focal Lengths: 15 to 100 mm.

Cinegor High Speed Lenses—Ideal for Color Work. $f/2$ and $f/2.5$. Focal Lengths: 40 to 100 mm.

Telestar—A lens of the telephoto type. $f/4.5$. Focal Lengths: $6\frac{1}{4}$ to $15\frac{1}{2}$ inches.

Catalog P-3 on request

**C. P. GOERZ AMERICAN
OPTICAL CO.**

317 East 34th Street New York

(4) The photo cell (above the drum).

Modern sound units run silent films as well as sound, and modern silent machines are made so that they can be converted to sound in a few hours.

Except for the difference in size of

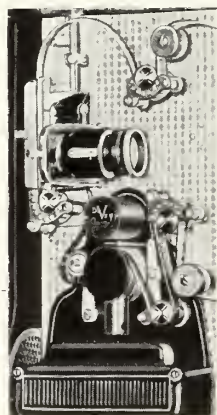


Fig. 5

the slit to correspond to the minute difference in width of sound track all of these sound head elements are the same in both 35 mm. and 16 mm. units.

II. The Amplifier.

This is separate from the projector, and is the same as the amplifier used with 35 mm. sound units. The amplifier may be 7, 12, 15, 18, 25 or any number of watts, depending on the volume demanded. Being separate from the projector, it can be easily carried around for public address.

III. The Loud Speaker.

Identical with those used in 35 mm. units. These also differ in size, according to volume and quality required.

Usually, of course, amplifiers and sound speakers furnished with 16 mm. sound units are somewhat smaller than those furnished with 35 mm. sound units—but that is only because heretofore it has been assumed that the 16 mm. film could not yield a sufficient volume of sound for large audiences, a supposition that has since been proven erroneous.

(Concluding installment of "Talkies on 16mm. Film — A Success," Part Two, will appear in the April issue of THE INTERNATIONAL PHOTOGRAPHER.)

QUESTIONS AND ANSWERS

Cine-Service for Amateur Movie Makers

Note—This department is for your special benefit and use. It is a service open to all amateur movie makers who run into various problems in their movie making. And there's a standing invitation to submit your questions, which will be answered promptly in this department. Simply address your queries to Amateur Movie Questions & Answers, THE INTERNATIONAL PHOTOGRAPHER, 506 Taft Building, Hollywood, California.

Occasionally, I find that I must splice a 16 mm. sound film, which cannot be done on my conventional silent type of splicer. What is suggested?

If you do not care to go to the ex-

pense of converting your regular splicer, a passable substitute is conversion of the simple kind of splicer quite often supplied with projectors. Simply remove the registration pins along one side of this common splicer, and you're ready to splice the 16 mm. sound film.

On the screen, my pictures do not appear as brilliant as they used to; the lenses of my projector are clean. What is the cause?

Very possibly the cause for your less brilliant screenings is due to your projection lamp. Because a lamp either burns or it doesn't, to many amateurs, it is most often not inspected. However, projection lamps

do become less efficient as the bulb darkens through use. Check the condition of your lamp; also see that the reflector behind it is clean and in proper alignment. It is best to replace darkened projection lamps. This is especially advisable when projecting color film, as such films need fully efficient light behind them for pleasing results.

How much does sound filming increase the cost of movie making over silent shots?

Since sound film is exposed at the rate of 24 frames per second instead of silent 16 speed, footage requirements are 50 per cent greater for any given shot, and consequently your cost is higher by that percentage.

CINE-TIDINGS

Amateur Movie News Reviewed

Kodaslide Projector—In announcing the new Kodaslide Projector, Eastman Kodak Company provides owners of Kodak Retina, Kodak Bantam Special, and other miniature cameras, with an ideal means of projecting their "still" pictures. Priced at \$48.50, and manufactured to precision standards, this Eastman projector throws screen images as tabulated in the accompanying table. Either full-color Kodachrome transparencies, or black-and-white film positives from No. 135 or No. 828 negatives may be shown. For projection, each individual picture, properly masked, is mounted in a 2x2-inch glass slide, suitably bound.

The Kodaslide Projector is strong, solid and extremely easy to use. It has an attractive baked black-enamel wrinkle finish and dull-nickel operating parts.

Years of experience in slide projection have established the so-called "douser" method as the most pleasing way to shift from picture to picture. This method is one of the Kodaslide Projector's chief features. The 2x2-inch glass slides are inserted in the metal gate at the top of the slide holder and are gravity-fed by means of the slide-shifting lever at the side of the projection head. After the first picture has been viewed, the lever is raised. The image on the screen is cut off by a shutter. Then, when the lever reaches its limit, the slide just projected drops by gravity to the holder below the projection head. In this position, the dropped slide acts as a

stop to locate the next slide in the projection gate. As the lever is lowered to its original position, the new slide is clamped into position by spring fingers and the shutter opens, revealing the entire picture properly positioned and securely held in focus. The slide previously projected may then be removed edgewise from the holder.

Illumination is provided by a 200-watt 115-volt lamp with concentrated coil-coil filaments. Due to the high heat output of the lamp, the square lamp house has been carefully calculated as to size and design to remain safely cool on its outer surface. This is accomplished by means of an inner shell which permits an air space on all four sides. In addition, natural draft ventilation exhausts the heat from the top of the lamp house. The lamp house cover is baffled and may be turned so that both the heat and stray light are directed away from the operator and audience.

A spherical aluminum-coated glass reflector is located behind the lamp. The three-piece condenser lens unit, ample in size to give uniform screen illumination, has in addition a disc of heat-absorbing glass to prevent overheating of the slides.

The Kodaslide Projector comes equipped with a 47/8" projection lens of high quality. Its focal length assures plenty of room in front of the projector for spectators. The lens is said to give remarkable definition and has a flat field; hence, the projected

pictures show an even all-over sharpness right to the corners. Furthermore, the lens is free from distortion and chromatic aberration and is well corrected for astigmatism.

TABLE

Distance of Projector from Screen	Kodak Retina Slides	Kodak Bantam Special Slides	Picture Size on Screen
10 feet		8½ feet	21x30
13 feet		11 feet	28x40
16½ feet		14½ feet	36x52
19 feet		17 feet	41x60
23 feet		20 feet	50x72

Because owners of Kodaslide Projectors will want to show both vertical and horizontal pictures, a square screen is recommended. The knurled thumb screws at the front of the projector base provide a convenient means of adjusting the height of the light beam to the position of the screen.

The projector is 6½x9½ inches at the base and stands 10½ inches high. Weight, 5 pounds. An 8-foot length of rubber-covered cord with plug and convenient tumbler-type switch is provided.

A carrying case is available which will hold the projector, lens, and two slide boxes holding about 50 slides each.

New Book on Night Photography—It has always seemed an easy matter in Germany to get an expert to write an article, or even a book, on almost any conceivable topic. The German photographic press particularly has been extremely prolific and can count itself fortunate in having in its ranks



Kodaslide Projector for showing screen stills.

Dr. Walther Heering, a photographer-writer of rare skill. Dr. Heering is also a publisher of note. The extremely beautiful "Golden Book of the Rolleiflex" is an example of his publishing achievement familiar to all American students of fine photography. His recent book, "Night Photography," proved so popular that it simply had to be translated into English. This has been accomplished and, through the efforts of the book's exclusive American distributor, Burleigh Brooks, 127 West 42nd Street, New York City, the first copies are already available in this country.

Although a small book of but fifty-four pages, it is crammed with information on all phases of the subject. The author's rapid comprehension attempting this most fascinating of subjects is a joy to jaded eyes. The

book is divided into five sections covering, in turn, the problems of time exposure, snapshots at night, fireworks, flashlight photos at night, and a discussion of infra-red photography which allows pseudo-night effects in the daytime.

Last, but by no means least, "Night Photography" is finely printed and beautifully illustrated, in keeping with the best traditions of the Continental printers' craft.

"Night Photography," by Dr. Walther Heering, with forty-three illustrations, text in English, is priced at \$1.00, and is obtainable at your dealer.

Weltini Miniature Camera—Burke & James, Inc., 223 W. Madison Street, Chicago, announce the new Weltini 35 mm. miniature camera. Producing 36 negatives at one loading, the Weltini features a built-in range finder (automatically coupled to the lens), which also acts as a view finder. A new vibrationless "push button" shutter release represents an advance in fine camera design, enabling, it is said, shutter speeds of half second with the camera held in the hand. The Weltini is equipped with Compur Rapid shutter with speeds to 1/500th second, and models offer Zeiss Tessar F:2.8 lens, Xenon F:2, or Xenar F:2.8. Trimmed with chrome finish, the Weltini has leather covered aluminum body which presents an attractive appearance.

Watson Foot Switch—A convenient foot switch, for controlling the

light in an enlarger and other electrical-photo equipment, is currently offered by Burke & James, Inc., of Chicago. Use of the Watson Foot Switch leaves both hands free for "dodging" manipulation when making enlargements. A slight pressure of the foot turns the device and that which it controls "on"; release of pressure, to "off." The Watson Switch is well constructed, with rust-proof finish, and can be used for controlling any electrical device which does not draw more than six amperes at 110 volts.

Victor "News Reel"—There has come to our desk a current copy of Victor Animatograph Company's "News Reel," published by that well-known 16 mm. firm of Davenport, Iowa.

A lead story informs the industry of the increased manufacturing facilities now to be had at the Victor plant, which were necessitated by the growing demand for Victor 16 mm. products. Main step taken in the program of expansion was the purchase of a large factory structure, adjacent to the main plant, which additional space makes for more satisfactory production in keeping with the three shifts required in the manufacture of Victor's 16 mm. products.

The "News Reel" contains much news of Victor developments and current happenings in the 16 mm. industry. The paper is edited by George E. Beyer, advertising manager of the Victor Animatograph Company.

"RIVER OVER MY DOOR"

(Continued from Page 12)

... traveling at around thirty miles an hour ... our boat is drifting fast toward a row of factory buildings ... it'll be ground to pulp as soon as we hit ... but this newsreeler must be placed back into the boat ... or he'll be lost ... we succeed in getting him back ... he has been drenched in the icy, polluted waters ... he is okay outside of slight shock ... and his camera has been saved ... then we proceed down a street, under eighteen feet of water ... as we pass a corner ... or what once was a Cincinnati street corner ... in the business section ... we hit another whirlpool of water ... our boat is carried sideways with another lurch ... and we bang into a submerged telegraph pole ... breaking the tiller off the boat ... we are floating downstream ... helplessly ... while

the skipper and his crew work frantically to make emergency temporary repairs, to get us back to safety, a distance now, of three blocks ... we make a mental note of which telegraph pole we are going to pick ... as we spy another coast guard crew rushing our way ... finally we manage to master the stream ... we are again proceeding but at great caution ... the skipper is boiling now ... he is offering to throw an oar at the first newsreeler that aims a camera ... until we make the treacherous street corners, of which three remain until safety is reached ... finally he slows down and yells, "Okay, you lugs, go ahead and make your stuff now" ... we do ... I am getting a wet foot ... it's from the newsreelers clothes who has fallen into the dirty drink ... then we rush to the hotel ... we ship our film ... the newsreeler

that has had the ducking manages to dig up another pair of dry pants ... the wet clothing cannot be sent down to the valet ... this department is closed for the duration of the flood ... so the oldtimer is sitting there phoning his big boss back at New York ... and he is telling him exactly what scenes he has made ... the other newsreeler, that has gotten wet, is complaining to me about the quality of the "cookin' whiskey" we are forced to drink ... and I am taking a swig out of my glass ... figurin' and making a mental note that this really is about the worst "cookin' whiskey" I have also ever tasted ... but jeez at least you can't get typhoid from it ... like you do from River water ... at a time like this ... Yes, sir! ... I guess the old timers are right ... this is worst flood in history.

Scheibe's Effect Filters

Graduated Filters—Used in an adjustable holder which will permit the filter to slide up and down so that the colored portion of the filter may be adjusted to the varying skylines of a scene, eliminating distant haze and admitting full exposure where most needed, thereby registering every possible detail in the foreground, so often a total loss when an all-over color filter is used, and too, when none is used. Therefore,

Always Use a Graduated Filter. This type of filter is made in various colors and degrees, enabling you to preserve clouds in a scene, produce moonlight effects and night scenes in daytime. No increase in exposure is necessary unless filters have two colors, then apply exposure factor to lower half only, in accordance with the type of film in use. A trial will convince the reader of its supreme excellence. Has been used in motion pictures for over twenty years and is now used more than ever. This filter has been made in varying sizes and colors and it has done its work in a wonderful way. Neutral grays are also made in graduated or solids.

Fog Filters. This filter is made in

varying degrees of fog and is used to produce fog at any time, day or night. It produces its effect so naturally that one cannot tell the difference between natural or artificial fog. It is the quickest way to produce fog. Many other ways of producing fog effects are in use, but can be used only in very quiet places with no breeze about. In large areas only *fog filters* can be used, as the breeze has no effect on them and they work well at all times. These filters are made with the slightest fog effect, to the heaviest, and can be used with the utmost success. Graduated fog filters are used with great success, starting with clear glass and graduating into heavy fog. This is a long filter used for such purpose.

Diffusing Screens. The use of these screens with a high speed anastigmat lens enables the user to produce a beautifully softened or diffused image without sacrificing the speed of the correction of the lens. Made in Nos. 1/256, 1/128, 1/64, 1/32, 1/16, 1/8 and so on to No. 3, one has a wonderful selection of screens to produce any effect. They produce a beautiful effect and are more in demand than ever. They are also used for making projection prints



Emile Montemurro with his Akeley climbs the heights to shoot the annual ski contest near Chicago.

from sharp negatives. Variable diffusing screens are also made to fit the matte box. Any degree of diffusing screen can be made to order.

Monotone Filters. Made for Superpan and for Ortho, they are used judging light values (highlight and shadow) and also enable one to see color in terms of black and white. See your subject photographically and avoid disappointment and waste of film. 1" round made for the focusing tube on motion picture cameras. A valuable filter in motion picture work since 1916.

Hotspot Iris. (For process background.) Used on the projector at varying distances eliminates hot-spot entirely. Made in 6" x 6" and 8" x 8".

SMPE COMMITTEE SCORES SALE AND USE OF CUE DEVICES WHICH MUTILATE FILM

Continuing its campaign against mutilation of motion picture release prints, the Projection Practice Committee of the Society of Motion Picture Engineers at its recent meeting passed a resolution condemning certain devices for cueing prints now on the market. The resolution reads:

"The Projection Practice Committee of the Society of Motion Picture Engineers does not approve of any structural modification, injury, or mutilation of the standard release print by the projectionist, and views with disfavor the sale of devices capable of causing physical damage to film for cue marks or the like. The committee regards cue marking as a function exclusively of the laboratory or exchange which is involved."

This last action of the committee was passed after such a device was exhibited before the committee. This device enables the projectionist to punch a number of holes in the film to indicate points of change-over and is offered for sale to projectionists.



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The Cinematographer's Book of Tables

By FRED WESTERBERG

(Cameramen Should Add These to Their Little Red Books)

MAZDA LAMPS

LAMPS USED IN B & W MOTION PICTURE PHOTOGRAPHY

Wattage Rated	Type of Bulb	Type of Base	Amperes	Initial Lumens	Lighting Equipment Used
10,000	G-96	Prong	87.0	295,000	36" Sun Spots. Sky Pans.
5,000	G-64	Mogul Bipost	43.5	145,000	24" Sun Spots. Sky Pans. Solar Spots.
2,000	G-48	Mogul Screw	17.4	54,000	18" Sun Spots. Condenser Spots. Solar Spots.
1,500	PS-52	Mogul Screw	13.1	38,000	Rifle & Side Lamps. Strips. Floodlight & glow lighting.
1,000	PS-52	Mogul Screw	8.7	24,000	Rifle & Side Lamps. Strips. Floodlight & glow lighting.
1,000	T-20	Mogul Screw	8.7	27,000	"Lupe" and Utility Lamps. Fixtures.
1,000	G-40	Mogul Screw	8.7	22,000	Condenser Spot Lamps.
500	G-40	Mogul Screw	4.4	10,500	Baby Spot Lamps. Lighting Fixtures.
500	T-20	Medium Screw	4.4	13,000	Baby Spot Lamps. Lighting Fixtures.
200	T-10	Medium Screw	1.7	4,080	Practical Lighting Fixtures.

*C=Spherical, T=Tubular, PS=Pear Shaped. Numbers refer to diameter in 1/8 inches. All figures based on 115 volts.

LAMPS USED IN COLOR MOTION PICTURE PHOTOGRAPHY

Rated Wattage	Type of Bulb	Type of Base	Amperes	Initial Lumens	Lighting Equipment Used
10,000	G-96	Prong	87.0	325,000	36" Sun Spots. Sky Pans.
5,000	G-64	Mogul Bipost	43.5	162,500	24" Sun Spots. Sky Pans. Solar Spots.
2,000	G-48	Mogul Bipost	17.4	65,000	18" Sun Spots. Condenser Spots. Solar Spots.
2,000 Mov. Fl.	PS-52	Mogul Screw	17.4	65,000	Rifle and Side Lamps. Strip Lighting Units.
1,500	T-24	Medium Bipost	13.1	48,750	Scoops.
1,000 No. 4 P.F.	PS-35	Mogul Screw	8.7	33,500 10 Hrs.	Open Reflectors.
500 No. 2 P.F.	A-25	Medium Screw	4.4	17,000 6 Hrs.	Open Reflectors.
250 No. 1 P.F.	A-21	Medium Screw	2.2	8,650 2 Hrs.	Open Reflectors.

Photofloods Nos. 1, 2 and 4 also used for black and white photography where weight of equipment or limited power supply are factors. Data by General Electric Co., Nela Park Eng. Dept.

EQUIVALENT CAMERA DISTANCES

35mm. FILM

CAMERA DISTANCES REQUIRED WITH VARIOUS LENSES TO OBTAIN THE SAME HEIGHT OF FIELD

Height of Field In Ft.	FOCAL LENGTH OF CAMERA LENS IN MILLIMETERS									
	25	32	35	40	50	60	75	100	125	150
	DISTANCE IN FEET FROM LENS TO SUBJECT									
2.0	3.1	4.0	4.4	5.0	6.2	7.5	9.4	12.5	16	19
3.0	4.7	6.0	6.5	7.5	9.4	11.2	14	19	23	28
4.0	6.2	8.0	8.7	10.0	12.5	15.0	19	25	31	38
5.0	7.8	10.0	10.9	12.5	15.6	18.8	23	31	39	47
6.0	9.4	12.0	13.1	15.0	18.8	22.5	28	37	47	56
7.0	10.9	14.0	15.3	17.5	21.8	26	33	44	55	66
8.0	12.5	16.0	17.5	20.0	25.0	30	37	50	62	75
9.0	14.1	18.0	19.7	22.5	28.1	34	42	56	70	84
10.0	15.6	20.0	21.8	25.0	31.2	38	47	62	78	94
12.0	18.8	24.0	26.2	30.0	37.6	45	56	74	94	112
15.0	23.4	30.0	32.7	37.5	47.0	56	70	93	117	141

For higher values move decimal points to right.

CAMERA DISTANCES REQUIRED WITH VARIOUS LENSES TO OBTAIN THE SAME WIDTH OF FIELD

Width of Field In Ft.	FOCAL LENGTH OF CAMERA LENS IN MILLIMETERS									
	25	32	35	40	50	60	75	100	125	150
	DISTANCE IN FEET FROM LENS TO SUBJECT									
2.0	2.3	2.9	3.2	3.6	4.5	5.4	6.8	9.1	11.4	14
3.0	3.4	4.4	4.8	5.4	6.8	8.2	10.2	13.6	17.0	20
4.0	4.5	5.8	6.3	7.2	9.0	10.9	13.6	18.2	22.7	27
5.0	5.6	7.3	8.0	9.1	11.3	13.6	17.0	22.8	28.4	34
6.0	6.8	8.7	9.5	10.8	13.6	16.3	20.4	27.3	34.1	41
7.0	7.9	10.2	11.1	12.7	15.9	19.0	23.8	31.8	39.8	48
8.0	9.1	11.6	12.7	14.6	18.2	21.8	27.2	36.4	45.5	54
9.0	10.2	13.0	14.3	16.3	20.4	24.5	30.6	41	51	61
10.0	11.3	14.5	15.9	18.1	22.7	27.2	34	45	57	68
12.0	13.6	17.4	19.1	21.7	27	33	41	59	74	82
15.0	17.0	21.8	23.8	27.0	34	44	55	73	91	102

Based on Standard Sound Film Camera Aperture .631 by .868 of an Inch.

"LET'S GO CANDID"

(Continued from Page 17)

National Broadcasting System's Station WJZ was most kind to photographers during the candid camera night some time ago. The large studio was equipped with rows of special, high-power lamps in reflectors, installed for the photographers' use exclusively. It was a pleasure to shoot that program (Eno Crime Clues). Not always will the studio electricians oblige with special lights. Once when I was photographing Ivan Dmitri during his broadcast in Station WNEW, I had to resort to the use of a flash outfit to get the picture. In good old studio C of WHN (where our camera programs originated) we had several Photoflood lamps in reflectors placed in the studio especially for the audience.

Generally speaking, however, stu-

dios are not inclined to go out of their way to assist candid cameramen. Rudolf Hoffman, who does candid radio and stage pix for a living, once told me that the studios gave him his toughest problems. After a while he got wise to himself and carted with him a lighting outfit or else a flash gun . . . he simply couldn't get the lighting he needed, in spite of the

fact that he was photographing the biggest stars for their agents and even the studios! So the amateur doesn't have much chance all by himself, but always there is the possibility that he may, and for this reason he should be ready when the time comes.

Maybe some day I'll go into more detail on these matters, for they are a lot of fun.

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IN EVERY
PRODUCTION

FILTER FACTORS—LENS STOPS

F Value With- out Filter	FILTER FACTOR SELECTED															
	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	7	8	10	12	16	
	REQUIRED F-VALUE OF LENS STOP WHEN FILTER IS USED															
16.0	13.1	11.3	10.1	9.2	8.6	8.0	7.5	7.2	6.8	6.5	6.0	5.6	5.1	4.6	4.0	
13.1	10.7	9.2	8.3	7.5	7.0	6.5	6.1	5.8	5.6	5.3	4.9	4.6	4.1	3.8	3.3	
11.3	9.2	8.0	7.2	6.5	6.0	5.6	5.3	5.1	4.8	4.6	4.3	4.0	3.6	3.3	2.8	
9.2	7.5	6.5	5.8	5.3	4.9	4.6	4.3	4.1	3.9	3.8	3.5	3.3	2.9	2.7	2.3	
8.0	6.5	5.6	5.1	4.6	4.3	4.0	3.8	3.6	3.4	3.3	3.0	2.8	2.5	2.3	2.0	
6.5	5.3	4.6	4.1	3.8	3.5	3.3	3.1	2.9	2.8	2.7	2.5	2.3	2.1	1.9	1.6	
5.6	4.6	4.0	3.6	3.3	3.0	2.8	2.7	2.5	2.4	2.3	2.1	2.0	1.8	1.6	1.4	
4.6	3.8	3.3	2.9	2.7	2.5	2.3	2.2	2.1	2.0	1.9	1.7	1.6	1.4			
4.0	3.3	2.8	2.5	2.3	2.1	2.0	1.9	1.8	1.7	1.6	1.5	1.4				
3.3	2.7	2.3	2.1	1.9	1.7	1.6	1.5	1.4								
2.8	2.3	2.0	1.8	1.6	1.5	1.4										
2.3	1.9	1.6	1.4													
2.0	1.6	1.4														

Camera Speed and Shutter Opening Constant

FILTER FACTORS

FILTER FACTORS FOR NORMAL DAYLIGHT EXPOSURES ON STANDARD 35mm. MOTION PICTURE FILMS

Filter Used	EASTMAN FILM		DUPONT FILM		AGFA FILM	
	Super-sensitive and Back-ground	Super-X	Micropan	Superior	Finopan	Superpan
Aero-1	1.25	1.25	2	1.5	1.5	1.5
Aero-2	1.50	1.50	2	2	2	2
K-1	1.25	1.25	2	2	1.5	1.5
K-2	1.50	1.50	2	2	2	2
12	2.5	2.5	3	2.5	2.5	2.5
15-G	3	3	3	3	3	3
21	3	3.5	4	3	3.5	3.5
23A	3	4	5.5	4.5	4	4
25-A	4	5	11	8	6	6
29-F	8	10	22	16	12	12
47-C5	6	6	5.5	5.5	5	5
58-B2	8	7	8	5.5	8	8
N.D. .25	1.8	1.8	1.8	1.8	1.8	1.8
N.D. .50	3.1	3.1	3.1	3.1	3.1	3.1
N.D. .75	5.6	5.6	5.6	5.6	5.6	5.6
N.D. 1.00	10	10	10	10	10	10
3N5	4	4	4	3.5	4	4
5N5	5	5	6.5	5.5	7	7

The above figures have been furnished by the respective film manufacturers and represent average values expressed as far as possible to the nearest whole number.

LATEST STYLE VISCOSE PRODUCT ANNOUNCED

By KARL A. BARLEBEN, JR., F.R.P.S.

Because of repeated demands for an even greater flexibility in the famous Viscose Sponge which, as it now stands, is about the most useful thing the photographer can have in his darkroom, Willoughby's, Inc., 110 West 32nd Street, New York City, is introducing the Viscose Sponge in a new, unique form called the Viscose

Sponge Pack; actually two flat sponges cemented to two composition plates which are hinged at one end.

The new Sponge Pack measures $1\frac{3}{4} \times 3\frac{1}{4} \times 5\frac{1}{2}$ overall, and the total absorption is about 8 ounces. The Pack is a most ingenious device, for, by means of the double-action hinges, the sponges themselves can be used in practically any conceivable position and

with the greatest of ease and comfort. The composition backs are the ideal solution to ease of handling. By means of them, the sponges can be squeezed without the hands getting wet, film strips can be wiped on *both* sides simultaneously with a smooth, uniform pressure, paper prints can be wiped dry with real ease and surety and the sponges are at all times protected from dust and grit when not in use. The hinges permit the Pack to be used face to face or back to back, as suits the individual's convenience.


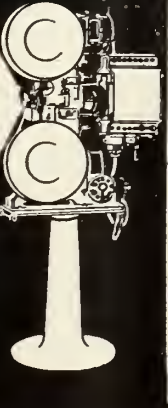
The new Viscose Sponge Pack is sufficiently large to wipe film strips $3\frac{1}{2}$ inches wide, and the backs make print wiping a pleasure . . . a new application of the sponge, incidentally. A firm, comfortable grip is at all times assured the user, and it is predicted that this latest device will change many darkroom habits, once it becomes available to photographers.

This new Pack is difficult to describe. The best suggestion I can make regarding it is to see it at your local dealer and in that way, learn how genuinely universal and practical it is for every photographic purpose.

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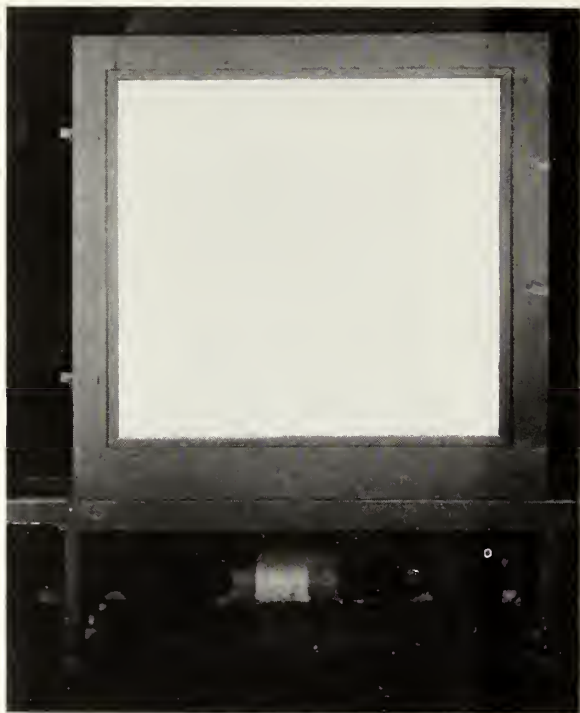
Sheriff's Criminal Identification Photographic Department

Among the first called to the scene of crime or sometimes accident are those unsung heroes of the Criminal Investigation Department. Armed with

case. According to Mr. Morford it almost never happens that two people will tell exactly the same story about what they saw—the human mind can-

The photographing of finger prints is an interesting study. Down there they have all sorts of odds and ends where the finger prints have been definitely outlined with different powders and then photographed—there's an old oil lamp chimney, an old wine bottle, jelly glass (with part of the jelly in it), cocktail glasses, etc. After these photographs are made they are compared with those on record and they tell us that if the negatives are of the same size, in some cases they will exactly match if one is placed over the other. Though handicapped by inadequate photographic and laboratory equipment, the results accomplished are remarkable.

One of the features of this department which we are told has been of great interest to other photographers doing similar work is their Back Ground Set Up for making identifica-



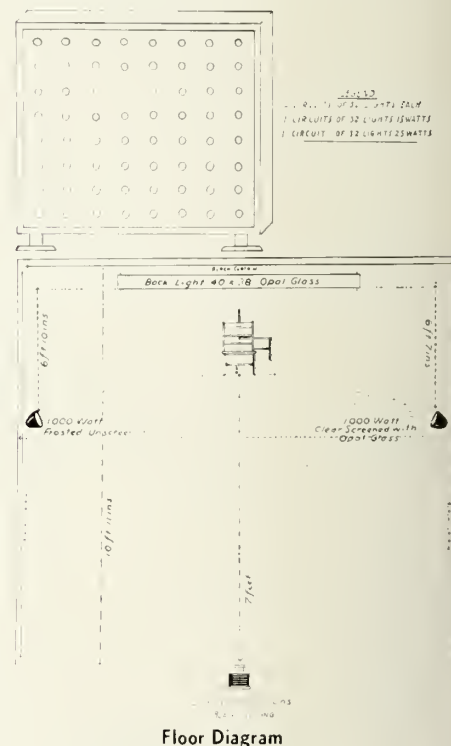
Photographic Screen

their cameras and portable lights they make a photographic record from every angle—a record that has much to do in helping to enforce the law of the land. If squeamish over the unpleasant tasks they must perform in the line of duty, they simply must grit their teeth and carry on.

A visit to the Criminal Division, Bureau of Investigation, Office of the Sheriff of Los Angeles County, reveals some interesting facts. Here Inspector Stenceland turned us over to Deputy Sheriff G. A. Morford. Mr. Morford has been doing this work for over ten years, so he is qualified to speak with authority. He will tell you that the men of his department never become quite hardened to the sights they must photograph, but the results constitute an invaluable part of the record of the

not retain the details which the camera so accurately registers. In case of trial by jury, enlarged photographs are handed the jurors, often enabling them to reconstruct the crime and reach a decision. These photographs are bound as part of the history of the case.

On the tenth floor we met Mr. Bernard Ginn, chief photographer, Bureau of Records and Identification. Here they have a laboratory, dark room, etc. It's a funny thing about that dark room—there was no light of any kind in it. The reason? It used to be equipped with the usual red and green bulbs, but someone came in once or twice and turned on the wrong light. These men must run no risk of losing a negative that may be invaluable in the solution of a crime, so now their dark room really is DARK.



Floor Diagram

tion photographs. The attached photograph and sketch furnished by Mr. Ginn undoubtedly will prove interesting to many readers.

E. Leitz, Inc., is Moving to New Quarters

The Leica camera has made such an impression on the photographic public of America that more and more people are realizing daily the exact performance and value of the precision miniature camera.

It has ever been the service policy of E. Leitz, Inc., to give full co-

operation to the Leica owner so as to enable him to derive greater joy from his camera, and the rapid increase in the number of Leica owners has necessitated an increased organization to adequately render this service. This, in turn, makes it necessary that E. Leitz, Inc., move to new and larger quarters and after March 1, 1937, E.

Leitz, Inc., will be located at the Heckscher Building, 730 Fifth Avenue, New York, N. Y.

All readers of this publication are invited to visit the new quarters of E. Leitz, Inc., in which greater facilities will be had for the demonstration of the Leica camera, its accessories, and apparatus.

Newsreelists Go Surrealist

By WARREN MCGRATH

No gentle readers, these pictures were not taken at Patten, but right here in our own Hollywood where anything can happen (and usually does). Now

plosions and other such hum-drum stories to preserve for newsreel posterity the saga of Surrealism as she is spoke. The Los Angeles branch of the

Mac, heavy, heavy hangs over thy head. That's "*Death Takes a Holiday*" in the person of Tom Craig, whose bony fingers seem about to caress you. Mov-



Exhibit A



Exhibit C



Exhibit B

anyone can tell you that the main difference between a newsreelist and a Surrealist is that the former wears store made clothes and gets paid for acting goofy. The latter, dear friends—well judge for yourselves.

To get down to stuff that makes sense, a feat which our respective families vaguely believe impossible, it was all a newsreel assignment. We were rudely jarred out of our routine coverage of ship strikes, floods, ex-

American Artists Congress decided that a post Valentine Ball would be just too cute if worked out approximately (very approximately) on the Surrealist Art theme. Accordingly the revelers appeared for a dress rehearsal in costumes whipped up from the stuff of dreams—or was it nightmares?

Now take Exhibit A—Merv. Freeman is valiantly carrying on for Universal but alas, he seems hypnotized by that Magic Eye. By the way, any bonafide Surrealist would, of course, recognize the costume that Miss Bettina Ryan is wearing as "*The Little Tear Gland That Goes Poob-Poob*."

As for Exhibit B—Warren McGrath applies a little "sound" technique to that broken heart on "*The Bride Left at the Altar*" as interpreted by Gladys Aller, whilst investigating that key-hole on Eula Long's "*Secrets of the Boudoir*" (for shame). Watch out

ietone seems threatened with the loss of a soundman.

In Exhibit C—The newsreelists and Surrealists burlesquers intermingle freely with apparently reckless abandon. But look closely and you will note the wary eye that Merv. Freeman is keeping on that foot in the bird cage. Of course the knife that hangs over his head is a matter of small concern because any newsreel cameraman is accustomed to that—literally if not figuratively. Chubby Lehmann is wearing a sun hat but the story behind this comparatively simple fact is that he hopes it will double as a crash helmet. Oh yes, that man with his foot in the bird cage represents "*Six Fathoms of Fog*" and the petite young thing in front of Merv correctly interprets "*Tintinnabulations in Miasma*" and if you don't believe me—consult any Surrealist Dictionary.

CAMERAMAN AND DIRECTOR REUNITED

Twenty-three years ago Hal Mohr was the cameraman on one of the earliest epics of silent pictures, "*Money*," and a fellow named Jerry Ash was the leading character actor of the production was was filmed in Fairfax, Cali-

fornia.

Today Jerry Ash is head cameraman on Universal's romantic comedy, "*When Love Is Young*," and the director of that production is—Hal Mohr!

"DEATH IN PARADISE CANYON"

The still cameraman in charge of "*Death in Paradise Canyon*," location—Twentieth Century-Fox, in Death Valley, was Bill Wallace, Local 659, I.A.T.S.E., and M.P.M.O., assistant

cameramen Harry Dawe and Jack Epstein. The beautiful lay-out in setting forth Mr. Wallace's work and which appeared in the February issue of INTERNATIONAL PHOTOGRAPHER, was arranged by our artist, John C. Hill.

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WHAT AND WHY

(Continued from Page 15)

be so indicated so laboratory does not get the credit for a loss of footage which did not exist.

"Pan" shots and "travel" shots should be tested for the majority of the prevailing exposure and the *balance* of lighting so arranged that the result will take care of itself.

Filter effects will not be harmed if some information is given as to the strived-for-result and this is quite noticeable where daylight night shots are made. Where there are dusk and dawn effects indicated, a good many times exposure is extremely over or under and negative man will endeavor to make something out of scene that was not intended if no information is given. This knowledge will assure the absolute co-operation of the laboratory and give the desired result.

Many times night interiors are fully lighted rooms exactly alike, day sequences in the same set-up, and if information is not given and no lights burning in set to indicate such atmosphere, while the result will not be too radical if scenes are played for day shots, they could have been so much better had no guesswork involved.

Accidental light changes during making of test strips with no opportunity for a repeat should be reported and information as to what other scenes it compares favorably be given. This way wrong interpretation of the exposure and lighting will be prevented and the correct quality saved.

Extreme changes of exposure in identical set-ups without complete change in lighting makes it very difficult to match quality.

Variations from the normal in developing time leaves its little tell-tale results and causes unevenness in quality and poor projection quality to the consequent detriment of everyone concerned.

The old axiom of "when in doubt over-expose" is an overworked evil. It does not always save the situation.

In fact, with a certain degree of softness it is the opposite of good judgment and thwarts the cameraman. Such an extreme implies further softening when development has to be shortened so as to bring negative within feasible printing range, and the result is very much worse than a bit less exposure, more development and an improved quality.

Contrast quality, for different reasons, should be so indicated, as the higher contrast necessary for process backgrounds. Under development here would be disastrous. But without such knowledge it is perfectly plausible for a normal quality to be attempted and that is not what the process department was after.

Sometimes cameramen (some), for their own reasons, cover every O.K. take with a test for the laboratory. This is fine for the cameraman, or would be were laboratory technique still in the rack and tank days, but causes faint smiles in the laboratory at the pains necessary to hide the fact that possibly the cameraman wasn't quite sure. The use of developing machines prevents such ultra-consideration and a general average is the only way out if the laboratory wants to get *its* work done. Many cameramen demonstrate that the same set-up and sequence being worked does not entail such radical changes in exposure, and their work testifies their knowledge in the uniformity and quality on the screen.

Tests should never be made with dust, haze or smoke obscuring the lens, unless this is the predominating effect of the scene. Nothing is more potent in giving a false density, usually many times higher with consequent underdevelopment and ruination of the quality than the three evils named above. They are absolutely fatal to any scene that has nothing in common with them.

There are other things to this test problem which appears so simple and

to which often so little attention is paid, but nothing so close to home as their absolute value to the cameraman and the simplifying of laboratory technique to the good and satisfaction of all.

A laboratory where the test system prevails does a lot of developing time juggling, has a lot of headaches at the mixture of good and bad, but when it is all over shows the better results; for it gets the utmost of value out of every foot of film *if the testing is always up to par and can be depended upon.*

The day's dailies look better, the printing range is restricted where desirable (except in exceptional cases) which expedites the printing of releases, and if the cameraman has done a good job, the laboratory must, he gets credit for a fine piece of photography, the laboratory for good work (maybe) and perfection is the watchword.

There is no arbitration about that little test strip. To obtain the highest value from its purpose it must be accurate. When it is not it has an adverse result, reacting to the disadvantage of everyone concerned, oftentimes being the unwitting cause of the downgrade tumble of many people involved in the making of it.

When it *is* accurate and full use has been made in the laboratory of its possibilities, all around is found satisfaction—from the pleased star, the nonchalantly agreeing producer, the cameraman, the public critics, on down the scale to the laboratory, and in that temple of high acidity they go their way just a bit unsung, hoping that the next picture will turn out just as swell, and wondering whether the day will come when they, too, will have their names written on the scroll of the credit title, for while it is considered impossible, the "lab" does an awful lot of good photography right in their musty, acid smelling dark rooms.

PICTURE RESEARCH VARIATIONS

(Continued from Page 9)

background of that day had its ups and downs also—in fact as one reads of what was happening in the many different eras—from actual source material in periodicals and newspapers of the day, it really gives one more of a sense of proportion and perhaps our present problems aren't the only ones the country has faced for all they're so serious to us.

It is appalling to think how close to our own time were the atrocities of the illicit slave trade. In our research

work for "The Slave Ship" the period of which is 1845-1857, we ran into many interesting facts and stories. One was that of the two ships that passed each other in mid-ocean. Each had a great slave cargo. At that time a disease of the eyes which caused blindness was greatly feared by the slave trader, as it was carried by African negroes. In the case of these two ships the disease had broken out on both vessels and as they passed, each called to the other for help for all aboard were

blind except one person on one of the ships. The ship on which all were blind was never heard of again, but on the other some of the crew recovered and took her into port.

The law of the sea and the language of the sea of 1850 were necessary in connection with "The Slave Ship." The diary of an old sea captain served us well in this. Perhaps as interesting a question as any in connection with this picture was the data regarding the

(Turn to Page 31)

Motion Picture Production In South America Up to Date

By JOHN ALTON

(Formerly a Member of Local 659)

Written Exclusively for International Photographer

ABOUT 25 pictures were produced in the Argentine Studios during the year of 1936. To Hollywood this probably looks insignificant, but to us down here, considering that the first sound stage was built only four years ago with a yearly output of one picture in 1932, it looks different. We call it an industry.

Financial Success

The greatest financial success of the year was, "La Muchachada De Abordo," a Lumiton production and directed by Cesar Ronero, starring the best box office bet of South America.

"Luis Sandrini", a comedy glorifying the Argentine navy, broke all box office records in the country (including American pictures).

New Directors

Next in the line was "Puerto Nuevo" which brought to the foreground two new directors and a new star. The directors are Cesar Amadori and Mario Soffici and the star, an already well known comedian, Pepe Arias, the find of the year, whose screen success will far surpass that of the stage. He is just a natural born comedian.

New Names and Faces

New names have reached the public. Names of actors, directors, cameramen, composers, producers, etc. Stage actors and radio singers have accustomed themselves to the camera and lights and have become famous over night. Names like Nedda Franzy, Aviglia, Gomezbao, Franco, Delbene, Muino, Alippi, Arata and a score of others, were known to a limited public of Buenos Aires, but with the advance of the Argentine motion picture industry they have reached the remotest spot of the Spanish speaking world.

Loco Lindo

"Loco Lindo" won recognition for its authentic exteriors of Patagonia. It was directed by Arturo S. Mom, a director who acquired his "technique" in Hollywood and Russia. Remember him?

Great Tango Singer

Another Argentine picture that deserves mentioning is "Ayudame a Vivir". It proved that its leading lady is not only one of the best tango singers of the stage, but of the screen as well. This young lady is Libertad Lamarque.

First Superproduction

The first Argentine superproduction was produced this year. "Amalia" a historic novel, produced by the number

one producer of the country, Angel Mentasty, due to its artistic photography, won the prize of the year. It is what they call here a "prestige" picture



and put Argentine Sono Film ahead of all other producers.

Max Factor Make Up

Bruno Boval an imported makeup artist introduced for the first time the product of Max Factor, which has conquered not only the studios and theatres, but all department stores and beauty shops as well.

With the introduction of R.C.A. pictures sound more American. Sound has improved considerably and wires were sent to the States for stationary studio equipment.

American Concerns

American concerns took an interest in local production. Paramount broke the ice and released "Radio Bar," produced at the "Lumiton" studios. United Artists followed with a contract for six locally made pictures, which will be released in 1937.

Hollywood Equipment

Tom White, of Hollywood fame, is responsible for bigger and better pictures. He has flooded local studios with Hollywood cameras, lenses, sound and photographic material. He is about to build a real modern laboratory, which when ready will be the first one of its kind in South America. More studios are being built. Argentina Sono Film found their studio in the city too small and are about to build another one out in the country. A new concern, Falma Film, is being organized and whose president, Senor Machinandia-rena (all one word) has spent several months in Hollywood "looking around."

Directors of the C.I.F.E.S.A., a Spanish studio have just arrived and are beginning to organize their Argentine plant. The Spanish world needs pictures and for the time being Spain is busy with a different kind of shooting.

The weak point of the local indus-

try continues to be the story department—stories, their adaptation (if they can be called that) and organization in general. Local producers have taken the line of least resistance—that of the theatre. Adaptation is handed over to the director, who, being of theatrical origin, concentrates on dialogue and forgets action. When they run out of material, we hope they will change the situation and consequently the quality of pictures.

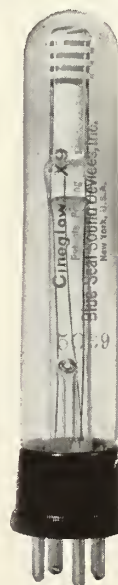
"Comision de Cultura"

A new baby was born in 1936 to the industry—the motion picture institute or "Instituto Cinematografico." It is a branch of the "Comision de Cultura" under federal supervision. It has been founded for the improvement of Argentine pictures, the producing of educational, scientific, etc., pictures, the introduction of Argentina *as is* and not as is known from misrepresenting novels and pictures.

The head of the institute is Senor Sanchez Sorondo, well known Senator and the "worktobedone" was handed over to Senor Carlos Alberto Pessano, director of "Cinegraf," recognized by Hollywood authorities as the most beautiful motion picture magazine in the world. If Senor Pessano will do to the institute what he did to "Cinegraf" we have the right to be optimistic.

1937 Comes Up Fast

The year 1936 has been an important year for the local motion picture industry, but all signs indicate that 1937 will be even more important.



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PERSPECTIVE

(Continued from Page 11)

shown by the heavy line, and so on around to No. 6.

By connecting these points we secure the outside contour of the steps below the horizon.

We must now find the respective radial points in the center of the supporting column. This may be done by simply taking the dividers and dividing the space between the center of the small circle of the perspective plan and horizon, at the vanishing point; or tracing from the converging

lines at the right, where they intersect the line running from step No. 10.

After securing these radial points we may determine the perspective inclination of the risers and treads by connecting the outside points of the contour with their relative radial points.

The contour of the upper section, above the horizon and to the right, is achieved in the same manner with the exception of one important consideration. After we reach step num-

ber 13 (the nearest upper step), 14, 15, 16, etc., again begin to recede and appear smaller. It requires considerable care to trace and co-ordinate the relative lines. The two diagonals at the upper right hand corner are given as an aid in keeping these points in mind. It may be mentioned that the use of diagonals throughout the study of perspective is an important aid in securing diminishing measurements.

The student who will carefully work out this problem will have little trouble with the average requirements.

MA NATURE PLAYS TRICK ON MOVIES

Old Mother Nature may be pretty good at making frost but Hollywood has its own way of doing things.

Two workmen who spent a day carefully painting frost on pumpkins and a rail fence to be used in "When Love Is Young" at Universal, returned next morning to finish their job. But meantime Southern California's recent "frost wave" had arrived,

and they found the exterior set covered with a beautiful layer of real frost.

Did they run and tell Director Hal Mohr to hurry out and shoot the scene with Virginia Bruce and Kent Taylor while there was real frost on the pumpkins? Not Hollywood painters. They waited for the sun to melt the genuine frost and then set about to complete their job with movie frost—out of a paint can!

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TELEVISION

By THE EDITOR

THE popular screen star, Robert Montgomery, and Mrs. Montgomery were among the party of picture notables to attend a recent demonstration of television as developed by the Don Lee Broadcasting System. They were the guests of Harry R. Lubcke, Director of the Television Division, at his home.

"I am surprised at the results . . . the present exhibition is a great advance over one I attended elsewhere a few years ago," said Mr. Montgomery. The film actor and his wife are shown with the television receiver which brought a synchronization of the images via W6XAO, the Don Lee television station, and the sound over KHJ, Los Angeles.

Images, and the accompanying sound were broadcast from the Don Lee building several miles away, by the television transmitter W6XAO and broadcast station KHJ. The residence was in no way specially prepared for television reception and similar results may be obtained elsewhere in Los Angeles and Hollywood by those who install a television receiver and antenna.

After observing the reception, Mr. Montgomery evinced deep interest in

Screen Star and Spouse Among Those Who Witness Don Lee Television Demonstration



the process employed and inquired as to the lighting and technique of making motion pictures for television purposes.

Mr. Montgomery has not been alone in examining the stature of this infant of the entertainment field. Since June 4, 1936, when the Don Lee developments were made available to the public, a steady stream of distinguished

persons have been guests at the demonstrations. Motion picture stars and executives; actors and stage producers; radio stars, executives, and station owners; members of the press; officers of the Army and Navy; and public officials from all over the United States have attended. Engineers and research scientists from the leading radio and television development laboratories in the United States and several foreign countries have been accommodated. Two such persons made an airplane trip from the east coast to witness a demonstration, since the major portion of television development in the country, except for the Don Lee work, is being done on the east coast.

Television broadcasting, being thus far a non-profit activity according to the rules of the Federal Communications Commission, can only be engaged in by organizations of considerable size. Transmitters may logically be installed only in large cities and entertainment centers. Thus Hollywood will remain a Mecca to those who would know the progress of television, as it has been to those who have followed the progress of the motion picture industry.

PICTURE RESEARCH VARIATIONS

(Continued from Page 28)

launching of a ship in those days. Innumerable pictures and accounts were found to facilitate the correct making of the scene. The story was founded on fact and the beautiful yacht, "The Wanderer" built for so different a pur-

pose, was actually turned into a "slave ship." The vessel used in the picture was one modeled after an actual engraving of the original ship and the interior fittings for slave carrying followed plans and pictures which were

made of captured slavers. Nothing could have been more appalling than the odor of a ship used in the slave trade—no account fails to mention this. Happily it will not have to be endured, if one sees the picture.

New Teague Walking Device

By ROGER BROGGIE



These interesting photographs were taken on a set at B. P. Schulberg's studio during production of the Paramount picture, "His Wife Lies."

Actors Ricardo Cortez and Mr. Tamiroff are shown walking down a New York street. The background was photographed in New York, airmailed to Hollywood, and composited at Schulberg Studio the following day by George Teague and his equipment.

The walking device used was built by Teague. It is driven by a variable speed motor and is absolutely silent in operation, allowing the recording of dialogue in all walking shots, heretofore considered impossible.



Hollywood Off Stage

By EARL THEISEN

Associate Editor International Photographer

PART IV

campaigns in the United States cost around \$45,000 for a single film.

Andrea Leeds one evening ran around in the recent blinding rains in only a scant dinner gown after an evening at one of the night spots. The story behind the event. She had been ordered to stay home to gain weight for her forthcoming film for Sam Goldwyn, but she succumbed to the temptation of a night out. She started out with a luxurious fur wrap, but someone stole it. The next morning the sheriff's office recovered it from a pawn shop.

THE studios plan to spend \$175,000,000 in 1937 for the production schedule, it is estimated. At least ten per cent of this amount, or \$17,500,000, will be spent in the exploitation of their stars.

Many recent films have had forewords flashed on the screen in advance of the film. Such forewords as: "This story not taken from the pages of history. Rather, it is legend-inspired by fact and all characters are fictional." Such forewords are demanded by the legal departments to prevent lawsuits by those who read themselves into the film and want to be soothed financially. In "Libeled Lady," certainly sheer entertainment, the defensive foreword was used for fear some wealthy family might feel that the story was pointed at them. John Barrymore's representatives were reported to have called on Darryl Zanuck to find if "Sing, Baby, Sing" was the story of his "Ariel and Caliban." Anyone knowing British-Irish history can assume that "Beloved Enemy" was the story of the Irish patriot, Michael Collins, but the studio denies it up and down. The studio had to get permission from the British Government to make the picture and had to abide by certain scene changes that prevented any Irishman or Englishman from getting any political significance which would have caused a ban.

In Warner's "Three on a Horse," they were even careful that the name of no real horse came into the script. "San Quentin" demanded the use of a name of a San Francisco night club, but every night club in the city was scanned to make certain the film did not duplicate the name of any real club. Cecil B. De Mille had to get permission of all the families of the characters appearing in "The Plainsman." Automobile license plates must be checked. For instance, if crooks were seen escaping in a car bearing a New York license number, the owners of that real license would have damage suits in court right away. The studios have city directories of every city or hamlet they can find; lists of motor vehicles, names of cafes, and books that go into minute historical descriptions of every historical event.

Sam Goldwyn spent around \$850,000 in the production and pre-advertising of his film, "Beloved Enemy." He believes that another \$150,000 will be handed out in exploiting the picture. He will use his rising star, Merle Oberon, as the keynote of the campaign. Sam Goldwyn's still photographer shot about 800 photos for the campaign. Billboard

"Sound pictures will attain their greatest perfection only when directors realize that silence still has its uses in talkies," is the opinion of David Howard, director. "Only recently has it dawned on many that silence can be more tense and eloquent than great booming noises. The stillness that frequently precedes or follows dialogue can be just as effective as a thousand words in strengthening the drama of a scene," the director declared.

Many of the movie stars use artificial eyelashes to improve the glamor and stuff. So common is this practice that a director working with Marie Wilson thought she was wearing pasted-on eyelashes that were too long. He told her to take off the mammoth eyelashes but when she told him they were the real ones, he said no and gave them a pull. They were real ones.

It's quite a story. The other night Joan Crawford was at the Trocadero playing. For reasons of her own she took off her shoes under the table. When she came to look for them, they were gone and she had to go home in stocking feet. It is thought a Crawford fan must have been at the club that night.

When Nelson Eddy moved out of his Beverly Hills home, the souvenir hunters were on hand to carry off broken records, old magazines, and anything else that once Nelson Eddy owned. One fan actually picked up a lettuce leaf which she was going to press as she would a flower.

A precedent was set when a print of "The Plainsman" was shipped to Manila by China Clipper to make the release date of January 25. The film was shipped to San Francisco where it was boarded on a Clipper ship for the trans-ocean flight.

A European discovery for recording sound magnetically was given some attention in the filming of "Good Earth." Iron dust is impregnated in the film emulsion and the sound pattern is recorded magnetically.

Jeanette MacDonald in her sequences in "Maytime," where she portrays an old woman wears, or should we say, carries weights in her shoes to make her walk slower and with the drag of the aged.

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PENETRATION

Cameramen on location in the desert near Yuma, Arizona, are working under difficulties in shooting this scene from the Technicolor production, "The Garden of Allah." Marlene

Dietrich and Charles Boyer co-star in this David O. Selznick production, under the direction of Richard Boleslawski. Howard Greene, Photographer; Hal Rosson, Photographic adviser; W. A. Oettel, Studio Chief Electrician.



Exceptional penetration and carrying power are required of a light source to pierce the obscuring clouds of a sand storm on the desert, but the carbon arc proved equal to the task.

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INTERNATIONAL PHOTOGRAPHER

Vol. 9

Hollywood

No.



David Abel photographs "Shall We Dance" with Astaire-Rogers using RKO super camera. Page 9.

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"ALL IN A DAY"

George Hurrell, member of International Photographers, Local 659, whose beautiful series on Shirley Temple appears on this page, is one of the ace portrait photographers of the day. Currently operating his own studios in Hollywood, he previously was head portraitist at MGM. Hurrell entered the portrait field via art school and the advertising game. After studying at Chicago's Art Institute and Academy of Fine Arts, he became interested in photography while working as an advertising artist. He came to California in 1925 and painted at Laguna Beach several years before entering studio work. His unusual pictorial effects have been featured in *Vogue*, *Harper's*, *Esquire* and many fan mags. He does special color work for *Photoplay*. His latest big assignments are portrait series of Marlene Dietrich and Jean Harlow and a special series of stills for Selznick-International's "Prisoner of Zenda."



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Hollywood Offstage

Most unusual job in Hollywood is that of hat-wiper. Jimmy Wade is on this assignment at Universal, where they're making "The Road Back," sequel to "All Quiet on the Western Front." Working on the backlot at night, the frost collects on the soldiers' steel helmets. The result is by no means satisfactory for photographic purposes, so Jimmy Wade, veteran assistant director, has the hat-wiping privileges.



Not to be outdone by hat-wiper Jimmy Wade, Verner Moir of MGM enters the unusual job race. Miss Moir is a whisker-filer and here demonstrates technique of the job.

Although James Dunn owns both a horse and an airplane, his employers evidently place more confidence in the sky machine than the equine, in comparing Jimmy's ability to stay in control of either. They have asked him not to ride the horse until his current assignment is completed.

An out of the ordinary number is featured in the new RKO musical, "Shall We Dance," (no question mark). Fred does one of his tap terp numbers on steel plates, which have been made of varying thicknesses so the Astaire tapping will give off a xylophonic effect.

Bing Crosby has just discovered to his great dismay that ever since he has been crooning into mikes of one sort and another, he's been incorrectly pronouncing the word—ROMANCE. Frank Tuttle, who directed "Waikiki Wedding," informed Bing it goes ROMANCE instead of Romance. Fred Astaire please copy.

EARL THEISEN.

INTERNATIONAL PHOTOGRAPHER

Vol. 9

Hollywood, April, 1937

No. 3

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SILAS EDGAR SNYDER, *Editor-in-Chief*HELEN BOYCE, *Business Manager*EARL THEISEN and CHARLES FELSTEAD, *Associate Editors*LEWIS W. PHYSIOC, FRED WESTERBERG, *Technical Editors*JOHN CORYDON HILL, *Art Editor*D. K. ALLISON, *Contributing Editor*

A Monthly Journal Dedicated to the Advancement of the Motion Picture Industry in All Its Branches: Cinematography, Professional and Amateur; Photography, Lighting, Process, Sets and Decor., Laboratory and Processing, Film Editing, Sound Recording and the Allied Arts and Crafts of Theatre Projection and Operation.

The International Photographer, as the official publication of the International Photographers, Local 659, a part of the International Alliance of Theatrical Stage Employees and Motion Picture Machine Operators of the United States and Canada, not only represents the entire personnel of photographers now engaged in professional production of motion pictures in the United States and Canada, but also serves other technicians in the studios and theatres, who also are members of the International Alliance, as well as executives and creative artists of the industry.

CONTENTS

ON THE COVER: David Abel uses RKO-Radio's super camera in photographing the new Astaire-Rogers picture, "Shall We Dance." Left to right: Ginger Rogers; Fred Astaire; Trudy Wellman, script girl; Mark Sandrich, director; David Abel; Willard Barth, second cameraman, (seated); Joe Biroc, assistant. The picture is by Michle. For story of the RKO-Radio camera turn to Page 9.

Hollywood Offstage	2
Tradewinds	5-6-7-8
Camera	9-10-11-12
Sound	13-14-15
Laboratory	15-18-19-20
The Camera Clicks	16-17
Lighting—Sets—Decor	21-22-23-24
Projection	25-26
Radio	26-27-28-29-30
Amateur Section	30-31-32

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INTERNATIONAL PHOTOGRAPHER

Vol. 9

No. 3

Tradewinds

Story Cycles Get the Air • The Still of the Month • SMPE Prepares



PHOTOS BY ELLIS

(Left) Director Keighley, Cameraman Polito and Mauch twins. (Right) Return of the Prince floors Erroll Flynn.

Story Cycles on Toboggan

... studio chieftains
united for balanced
diet in screen fare ...

The Hollywood story cycle—productive in the past of many frenzied critical potshots at picture makers—has quietly and unobtrusively faded from the production scene during the past few years. Soon it will be relegated to the Cain's storehouse of other Hollywood myths and legends. Indicative of the passing of story cycles is the fact that today among Hollywood's top production chieftains, not one could be uncovered who was willing to speak for the defense and virtually all the production bosses were delighted to assist in booting the story cycle idea into oblivion.

The trend toward insistence on a balanced diet in screen fare, with emphasis on fundamental values from story to technical details in each production, is the result partly of a general executive about-face from imitation to pioneering, which has been greatly in-



The big coronation scene in Warners' "Prince and the Pauper," very timely release of their spectacular film version of the Mark Twain classic. Jack L. Warner is among the studio executives who unanimously oppose story cycles. He says there positively is no cycle implication in Warners' release of "The King and the Chorus Girl" and the Twain yarn. Both were produced only because the stories were excellent vehicles, states the Burbank production chief, and their tieup with international headlines is coincidental, not contrived.



Will H. Hays, who celebrated his 15th anniversary as film czar March 5. The so-called Hays "purity machinery" has played an influential role in nudging harmful story cycles into the discard.

fluenced by the policy of the major companies in releasing four to eight picture units, produced by able independent picture-makers.

Men like David O. Selznick, Samuel Goldwyn, B. P. Schulberg, Emanuel Cohen, C. B. DeMille, Walter Wanger, Sol Lesser and Douglas MacLean—producing small blocks of pictures—striving with each production for the unique, the fresh, the timely and the entertaining, must plan and arrange for story material of broad basic fundamental values, especially fitting the small groups of star names each has under personal contract.

Also, production chieftains in the companies delivering huge blocks of product annually, such as Jack Warner and Hal Wallis at WB-1st National; S. J. Briskin at RKO-Radio; Darryl Zanuck at 20th-Fox; L. B. Mayer and Eddie Mannix at MGM; William LeBaron at Paramount; Charles E. Rogers at Universal; and the Frank Lloyds, Mervyn LeRoys, Wesley Ruggles, King Vidor, and other unit producers with whom they have surrounded themselves, are scouring the market for stories that will stand on their own, instead of trying to concoct versions of current hits.

Important executives doubt seriously whether the industry will ever again see anything comparable to the insane situations best typified in film history by "Broadway." A hit stage play, it was purchased at a huge figure, but by the time Universal—under an agreement not to release the picture until the play

had milked legitimate run possibilities—got the picture to exchanges, virtually every company in the industry, down to the smallest quickie producer, had already released a version of the hit show.

Last important story trend of any cycle proportions were the groups of "G-Men" and "parole" yarns turned out by a number of companies, yet even in these instances, the productions released close together were not copies of one previous hit but rather simultaneous capitalizations on a "hot news" topic.

In this connection, another important influence has been the policy of the Hays' organization in frowning upon any rush to capitalize on such topical subjects as the abdication, new gangster and crime developments and similar spicy items, which, when hashed and rehashed in pictures, have inevitably brought much criticism.

Darryl Zanuck, always a pioneer and innovator, states his views very clearly:

"The word trend is odious to me, personally, in application to the production of motion pictures, for the simple reason that as an art and as a business the industry has long outgrown trends.

"The coming year will witness three important developments in production, however—developments that I believe are of the utmost significance.

"In the first place, I expect there will be a number of great stories with historical backgrounds, stories with the scope of our recently completed 'Lloyds of London' and 'The Slave Ship.' It is needless to point out that any history book contains the most gigantic stories ever written; it is important only to know that productions of this type will receive more and more attention.

"In the second place, I see an increasing interest in musical pictures. 20th Century-Fox, alone, is scheduling one a month. We recently completed 'Wake Up and Live,' and will soon start production on 'Sally, Irene and Mary' and 'Alexander's Ragtime Band.'

"Thirdly, large scale production will be of the utmost importance. Our films are being conceived and executed on the most liberal scale. Pictures such as 'Lloyds of London' and 'Slave Ship' make unstinted production a necessity. Musicals, too, require elaborate preparation and production. Whatever we do in 1937 must be done in a generous manner."

Samuel Goldwyn, who matches an antipathy for so-called "B Pictures" with a distaste for the imitative, says forthrightly: "Trends in the past have been ruinous to the picture business. Few of us need to do much remembering to hark back to the sour box-office effects of past repetitions and monotonous cycles. Carbon copies not only suffer financial losses but they also drive people away from theatres to the detriment of good pictures that may follow. If there is anybody left in this business who believes it smart to try and make 'Zanuck pictures' or 'Capra pictures,' the obvious answer to his problem is: either hire Zanuck or Capra or get busy and make something that will be known as an 'anybody picture.'"

B. P. Schulberg and Emanuel Cohen, both former Paramount production



SCHOENBAUM

S. J. Briskin, RKO-Radio's production chief, here demonstrates his stance at the studio's annual golf tourney. Briskin is one of the production tops who takes a swing at story cycles as poor policy in this month's International Photographer.

heads, now delivering blocks of pictures for Paramount release, are unanimous in dropping the thumb on cycles. In fact, Schulberg denies that cycles, in the true sense of the word, ever existed. As he pithily puts it: "There have been only good stories and bad stories and some mediocre stories. The good stories, like most other good things, frequently are imitated, with the usual results for the imitator."

Cohen says:

"The end of the cycle era in the making of motion pictures has been coming for a long time, even though it has been overlooked in many cases by many in the industry. The reason is simple—the farewell to cycles was dictated by audiences.

"Motion pictures are made for audiences. That sounds trite, perhaps, but the fact has been disregarded too many times. Even the hardest audience rebels when producers attempt to repeat the same theme over and over again. Great creative works do not copy one another. Screen entertainment is bound by rules similar to those governing most of the arts. To create is to win audience approval—to copy is to bore those same audiences. And while copies may often equal the original, they remain copies and as such are not worthy of the attention given that which came first. I believe this is true of screen stories even more than of novels, paintings, music and plays. True enough, the volume of productions emanating from studios during a year is so large as to almost preclude entire originality in every motion picture story—but we should, at least, strive to be new. In other words, to interpret the opinions of the

audiences—try to do what others are NOT doing!”

C. B. DeMille, with a long record of spectacular and unique pictures, is another who detests cycles and imitators. He expressed thorough agreement with the outspoken attitude of other executives.

S. J. Briskin, Radio's production chieftain, is another in hearty agreement, stating crisply that: "The day of the cycle in motion pictures is practically gone. The world today has too many interests to pay attention long to one subject. Any motion picture stu-

dio which tries to capture public attention without offering variety is doomed to box office failure. With a fifty-picture program to consider, a production executive must look for fifty strong stories of varied type. He may not be successful in finding such a gold mine, but at least that should be his object—to offer a mixed program of drama, music, comedy, timely subjects, striving to make each picture different, more powerful, more captivating."

"Cycles as such are through because no picture of important calibre can afford to be a carbon copy of a previous

production," declares Walter Wanger, another outstanding exponent of the novel and unusual in story themes. The UA producer says: "It may seem trite but it can do no harm to emphasize over and over again that each picture must stand on the merits of each story, and that individuality of plot and characterization is vital. Possibly smaller-budget attractions will remain in molds that fail to vitalize into entertainment, but the day of hopping on the bandwagon to make a certain type of picture because one of that nature clicked is definitely gone."

Hold It for A Still

... a sane approach to problems of the studios' "Forgotten men" ...



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Above: Beauty, Easter shot of Gail Patrick;
Center, Novelty, as Elmer Fryer "shoots"
Claude Rains in WB gallery; Left, Action-Humor, as director Leo McCarey acts a gesture.

Walk on any lot in the business, from the majors to the fast quickies, and you'll find the stillman peering out from behind the eight-ball, fulminating a barrage of smoking squawks. And rightly so. The stillman is the "forgotten feller" of the industry, presenting one of the many delightful paradoxes that make the business so intriguing.

Although the stillman stands at an important point between the picture and the box-office—since the stuff he records on film or plate is the one prime contact, whether in printed form or lobby display, with the paying cash customer—his is a constant headache, principally through lack of cooperation from other

departments. Everybody generally recognizes the importance of stills, otherwise there wouldn't be so much money poured into that department, but few do very much but recognize it.

The INTERNATIONAL PHOTOGRAPHER, eschewing either constructive or destructive criticism, is with its May issue inaugurating a new feature, which we believe, will stimulate interest in the stillman's work, and will eventually lead to a constructive improvement in the quality of stills emanating from the studios. That is, publication of the outstanding still shots of the month, with selection of one particular shot as "The Best Still of the Month."

The program is simple. For each

picture in production at any studio, the stillmen on that picture may submit three samples of what they consider their best work on that picture. Also, each free-lance photographer, doing work for studios or stars, may submit three best samples from each particular assignment.

Newspaper and magazines today are demanding stills that have action plus informality. They want pictures that tell a story. Therefore, the INTERNATIONAL PHOTOGRAPHER also will present in coming issues, articles by leading editors and publishers, engravers, printers and all the other contributors to picture exploitation, covering all phases of news and publicity picture situation.

There are not complicated rules and regulations, except that only studio publicity and commercially made photos are eligible. Just remember the deadline is 15 days before the date of issue. The PHOTOGRAPHER publishes on the first of each month. For the May issue the deadline on submitting stills is April 15.

Each still submitted should be accompanied by the following facts: (1) descriptive caption; (2) producing company's or client's name; (3) title of picture; (4) stillman's name; (5) camera; (6) make of film or plate; (7) conditions; (8) lens; (9) opening; (10) speed.

Engineers Gather

... SMPE Spring Convention in Hollywood May 24-28 ...

Preparation gets under way this month for the Spring Convention of the Society of Motion Picture Engineers which will be held in the Hollywood Roosevelt Hotel May 24th to May 28th, inclusive. ERPI's K. F. "Pop" Morgan is chairman of the Pacific Coast Section, which plays host to the visiting engineers.

Officers and committees in charge, who will function under the direction of S. K. Wolf, president, in handling the convention are:



K. F. "Pop" Morgan, of ERPI, Chairman Pacific Coast Section of the SMPE.

W. C. Kunzmann, Convention Vice-President.

J. I. Crabtree, Editorial Vice-President.

H. C. Tasker, Past-President.

G. F. Rackett, Executive Vice-President.

K. F. Morgan, Chairman, Pacific Coast Section.

G. E. Matthews, Chairman, Papers Committee.

The Information and Registration Committee is comprised of W. C. Kunzmann, Chairman, E. R. Geib, S. Harris and C. W. Handley.

SMPE Survey

... seeks data for model, standard theatre plan ...

A nationwide survey of theatres is being conducted by the Society of Motion Picture Engineers through its Projection Practice Committee, seeking data on sizes of screens, projection distances and angles, kinds of screens, types of projection-light-sources, plus all theatre interior dimensions. Information obtained will be used in the construction of standardized model plans for various types of theatres. These plans will include schedules of screen sizes, screen brightness, and similar information of value to theatre architects. The SMPE's Projection Practice Committee, chaired by Harry Rubin, has in the past done much valuable work in bringing about standard practice in projection rooms. Questionnaires in the new survey were mailed to exhibitors in March and additional blanks may be obtained by writing to the SMPE.

"To Be or Not to Be—"

Old readers of the INTERNATIONAL PHOTOGRAPHER will notice quite a few changes in this issue and new readers, we hope, will find in it information and enjoyment. The problems involved in broadening the INTERNATIONAL PHOTOGRAPHER's function from a journal for cameramen to a publication dedicated to the fullest and best possible coverage of every angle directly pertaining to the arts and crafts of the motion picture industry has never been better stated, we believe, than in the following quotation from a recent issue of the *British Journal of Photography*:

"It is a familiar fact that a newspaper account of a novel process or piece of apparatus, even in such a familiar matter as photography, is almost invariably quite inaccurate and only too often ludicrously so.

"On the other hand, an authoritative account of a similar subject by a technical authority is frequently as comprehensible to the popular mind as a philosophical thesis, and about as attractively interesting as is the list of mourners in a local newspaper's description of a parishioner's funeral. That sort of communication may be quite suitable in discussing matters with others of the writer's own profession or craft, but is entirely out of place, for instance, in the instruction of beginners or in addressing a popular audience."

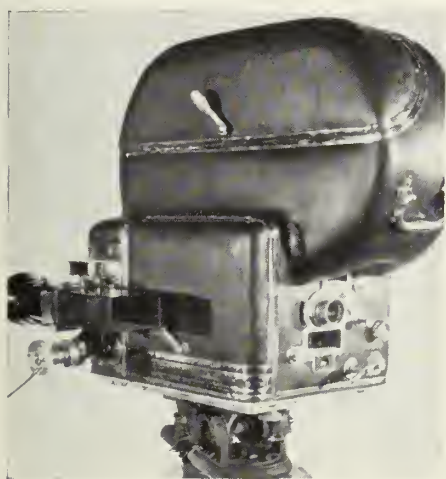
It is our hope and desire to strike some happy medium between the "ludicrously inaccurate" and the painfully precise. This task will be lessened considerably with the cooperation and constructive suggestions of INTERNATIONAL PHOTOGRAPHER readers, whether members of the International Alliance or friends in other branches of the industry. Any ideas, suggestions, editorial or picture material will be gratefully received and seriously considered.



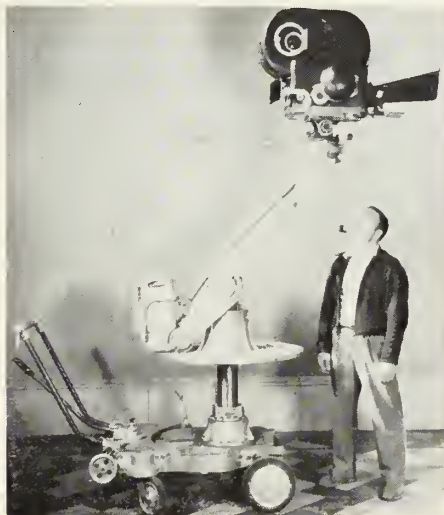
The Photographers snap the 1936 Academy awards winners: Left to Right: Sheridan Gibney, Original and Adaptation; Gordon Hollingshead, Assistant Direction; Walter Brennan, Support Actor; Gail Sondergaard, Support Actress; Roy Larson, representing "March of Time," which won a rare special award for distinguished contribution to newsreel technique; Paul Muni, Actor; Frank Capra, Direction; Dorothy Fields, Song; Tony Gaudio, Cinematography; Mr. X, under the palm (the Academy still doesn't know who he is) and Seymour Felix, Dance Direction. MGM's "Great Ziegfeld" won the Best Production honor and their Sound Department, headed by Douglas Shearer, best recording. In the Technical awards, a certificate of merit was given E. C. Wentz and Bell lab for multi-cellular high frequency horn and receiver, and to RCA for Rotary Stabilizer Sound head; honorable mentions to RCA, ERPI and United Artists for other improvements.

Camera

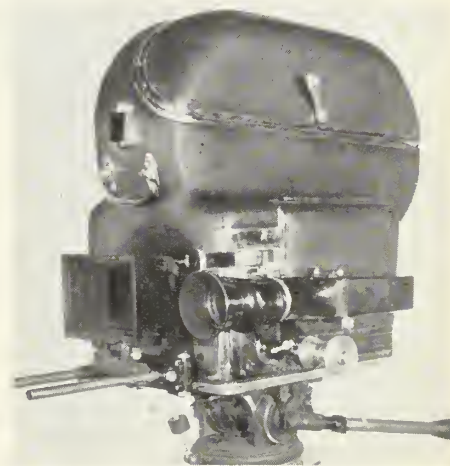
A Modern Studio Built Camera-Dolly • The Robot • The Super-Ikonta



Shooting position from left rear.



PHOTOS BY MIEHLE
swing high—with grip Lou Anderson . . .

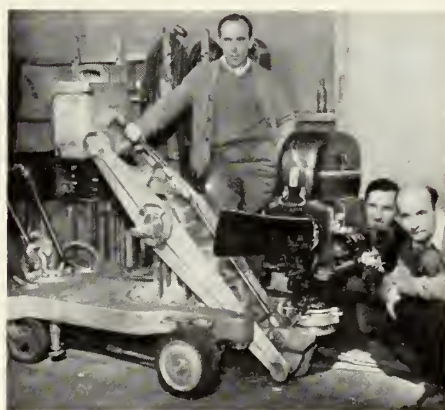


Shooting position, finder side.

RKO's Camera and Dolly Unit

... speed, efficiency in shooting aided by many improvements

Outstanding in the unending campaign to improve and refine the technical processes of motion picture production is the camera and dolly, developed as a unit at the RKO-Radio lot by William Eglinton, head of the camera department, and Harry Cunningham, of the precision machine shop, and their able assistants. A glance at the illustrations on this page reveals instantly that the camera is indeed "a thing of beauty" and actual production experience has proven its speed, flexibility, simplicity and security of operation.



... swing low—standing, grip Jimmy Kirley; behind camera, assistant Joe Barth; right, second Willard Barth.

Both the camera and dolly are covered by patents already obtained or applied for. Seven such units now are in operation on RKO-Radio productions. A majority of the ideas embodied in the camera-dolly team were engineered and developed by Eglinton and Cunningham and their staffs.

The camera itself weighs approximately 135 pounds, when mounted on the crane arm, which is balanced easily with counter-weights. It is completely outside-controlled with the following features:

- (1) Focusing tube;
- (2) 5 and 10 power magnifier;
- (3) Viewing glass;
- (4) Automatic shutter dissolve;
- (5) Manual setting of shutter if desired;
- (6) Full vision of shutter setting and rack-over;
- (7) Lens focusing device with a

single scale for all lenses from 24 mm to 4";

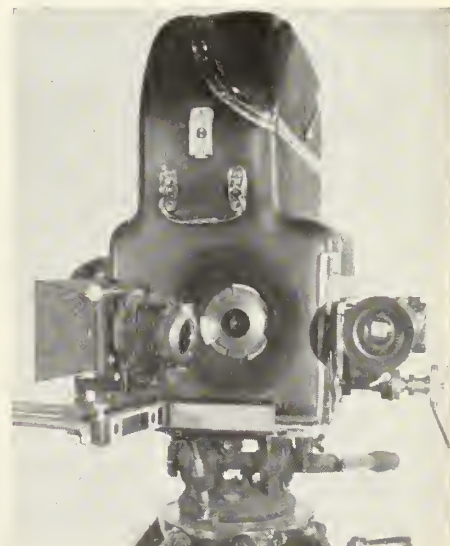
- (8) Finder focus and setting from a single control knob;
- (9) Lens focus, finder control and dial setting operate from one foot to infinity;
- (10) One switch controls starting and stopping of camera but may also be operated for camera use only.

The dolly is a compact unit and can be operated in the widest variety of positions and conditions. The unit can be placed readily in any desired position within a low set-up down to two feet and a high set-up up to seven feet.

The dolly also has a variety of set-



Side view with both the motor and magazine pulley doors open.



Front view with matte box in "out" position, showing lens inserted and connection for light showing above handle with rear view focusing dial mirror in position above the view finder lens.

tings for truck shots, such as: all four wheels locked; all four wheels free; front wheels locked and rear wheels free, etc.; and all four wheels may be set for right or left oblique.

—HERBERT ALLER.

Candid“Magic Eye”

The Robot is basically a miniature camera for candid work of a high order, yet it is capable of turning out individual exposures in rapid succession—as quickly as the finger can press the shutter release button—which, in average cases, is four pictures per second.

The Robot is distributed in the United States by the Intercontinental Marketing Corp., located at 10 East 40th Street, New York City. As a miniature camera, it's super-miniature, measuring only 4¼ inches long, 2½ inches high and roughly 2¾ inches wide overall, including the lens.

The camera proper is made from



Karl Barleben, FRPS, winds powerful spring of new Robot, imported candid “magic eye” camera.

Krupp Vanadium Steel and finished in nickel, black pebble leather covered. The lens (Zeiss Tessar f:2.8, 30 mm. focus) is mounted in the camera in such a way that it is not necessary to extend it. The camera is ready for use at all times. The shutter is unique, in that it is of the guillotine-rotary disc type, and operates behind the lens. It produces exposures of from 1 second to 1/500 second. Focusing is done by means of what is known as “zone focusing.” That is, differently colored dots on the lens mount are matched so that depth of focus and the distance focused upon are quickly and easily taken care of. The view finder, too, is novel. It swings and can be used in two directions; for straight work and for right-angle shooting. In addition, a blue filter is incorporated to give true monochromatic interpretation to the scene.

The most unusual feature of the Robot is the winding mechanism which creates power to release the shutter, move the film to the next exposure, trip

The CINEMATOGRAPHER’S BOOK of TABLES
By Fred Westerberg Cameramen Should Add These to Their Red Books

Projection: 35mm. without Sound Track

Width, Magnification and Relative Brightness of Screen Image Obtained with Different Projection Lenses at Various Distances from the Screen

Width of Picture on Screen in Feet	Screen Magnification in Diameters	Relative Brightness of Screen Image	FOCAL LENGTH OF PROJECTION LENS IN INCHES							
			3	3½	4	4½	5	6	7	
			DISTANCE IN FEET FROM PROJECTOR TO SCREEN							
4	53	356	13	16	18	20	22	27	31	
5	66	228	17	19	22	25	28	33	39	
6	79	160	20	23	27	30	33	40	46	
7	93	116	23	27	31	35	39	46	54	
8	106	89	27	31	35	40	44	53	62	
9	119	71	30	35	40	45	50	60	70	
10	133	56	33	39	44	50	55	66	77	
11	146	47	37	42	48	55	61	73	85	
12	159	40	40	46	53	60	66	80	93	
13	172	34	43	50	57	65	72	86	100	
14	186	29	46	54	62	70	77	93	108	
15	199	25	50	58	66	75	83	100	116	
16	212	22	53	62	71	80	88	106	124	
17	225	20	56	66	75	85	94	113	131	
18	238	18	60	70	80	90	100	120	140	
20	265	14	67	77	88	100	110	133	155	
22	292	12	73	85	97	110	122	146	170	
24	318	10	80	93	106	120	133	160	186	
26	344	8.4	86	100	115	130	144	172	.....
28	371	7.3	93	108	124	140	155	186	.....
30	398	6.3	100	116	133	150	166	200	.....
32	424	5.6	107	124	142	160	177	.....	.....

Based on Projection Aperture .680 by .906 of an Inch.

Projection: Standard 35mm Sound Film

Width, Magnification and Relative Brightness of Screen Image Obtained with Different Projection Lenses at Various Distances from the Screen

Width of Picture on Screen in Feet	Screen Magnification in Diameters	Relative Brightness of Screen Image	FOCAL LENGTH OF PROJECTION LENS IN INCHES							
			3	3½	4	4½	5	6	7	
			DISTANCE IN FEET FROM PROJECTOR TO SCREEN							
4	58	297	14	17	20	22	24	29	34	
5	73	188	18	21	24	27	30	36	42	
6	87	132	22	26	29	33	36	44	51	
7	102	96	25	30	34	38	42	51	60	
8	116	74	29	34	39	44	48	58	68	
9	131	58	32	38	43	49	54	65	76	
10	145	48	36	42	49	55	61	73	85	
11	160	39	40	47	53	60	67	80	94	
12	174	33	44	51	58	65	73	88	102	
13	189	28	47	55	63	71	79	94	110	
14	204	24	51	60	68	77	85	102	120	
15	218	21	54	64	73	82	91	109	128	
16	233	18	58	68	78	88	97	116	136	
17	247	16	62	72	82	93	103	124	144	
18	262	14	65	76	87	98	109	131	152	
20	291	12	73	85	98	109	122	146	170	
22	320	10	80	93	106	120	133	160	186	
24	349	8	88	102	116	131	146	175	.....
26	378	7	94	110	126	142	158	190	.....
28	407	6	102	119	136	153	170	.....	.....
30	436	5.3	109	128	146	164	182	.....	.....
32	465	4.6	116	136	156	175	

Based on Standard Projection Aperture .600 by .825 of an Inch.

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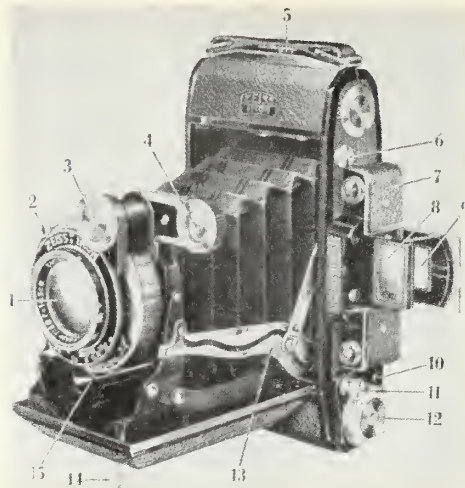
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Features of the Super Ikonta:

1. Lens. 2. Shutter rewind. 3. Focusing control; this operates lens and range finder at the same time. 4. Pivoting arm of range finder, which holds the revolving prisms. 5. Release of back, for reloading. 6. Release permitting simultaneous opening of camera and finder. 7. Telemeter (range finder). 8, 9. View finder. 10. Automatic exposure lock, preventing accidental double exposure. 11. Shutter release. 12. Negative rewind. 13. Springs holding camera rigidly in place. 14. Support permitting use of camera for time exposures without tripod. 15. Lever for setting of diaphragm.

the shutter and make the next exposure, all automatically. One winding of the spring will expose on an average of 24 exposures . . . and all the operator had to do is to press the release. Pictures can be made in this manner just as rapidly in succession as the operator can press the release.

Another handy feature is a built-in shutter. This is a 2X yellow-green filter which is put in place behind the lens or removed by merely pressing a lever. That in itself is not startling, but this is: When the filter is placed behind the lens, the shutter speed is automatically lowered to compensate for the necessary increase in exposure!

KARL A. BARLEBEN, FRPS

The Super Ikonta

(With only a few of the new Zeiss Super Ikonta camera available in this country, the following article by Wm. Aboussleman, a veteran film cameraman, now visiting in Hollywood, should be of interest to all photographers. Mr. Aboussleman brought with him a Super Ikonta II model, purchased in Paris, which is pictured on this page. The author in conjunction with Col. Leslie R. Naftzger founded the American Radio Corp. in France in 1923 and still is associated with the company as general manager.)

One great drawback to everyday use of candid by many photographers is the extremely small size of the finished negative which they produce (24x35 mm.). Enlargement in printing is thus rendered indispensable in almost every case. It was therefore inevitable that

cameras incorporating most of the desirable features of the candid cameras above, but permitting the making of a much larger negative, be manufactured. Zeiss is a leader in this field with the Super Ikonta, a marvelous little camera incorporating most of the desirable features of their Contax, lacking only the focal plane shutter of the latter.

Super Ikonta cameras are made in three models. The first produces a picture 45x60 mm., sixteen negatives of this size being made on the ordinary "120" or "620" roll. The second in the Super Ikonta series is in several respects the best of the three; with it one can obtain twelve negatives (60x60 mm.) on an ordinary "120" or "620" roll; this camera is equipped with a Tessar 80 mm., f:2.8 lens, to which the telemeter common to all three of the Super Ikontas is coupled. This telemeter, or range-finder, makes child's play of rapid and precise focusing. The lens is mounted in a Compur shutter, the maximum speed of which is 1/500th of a second. The third in the series is the Super Ikonta II, chosen by the author of these lines for his personal use.

The Super Ikonta II is a dual purpose camera, for the operator may at will use it for the reproduction of sixteen 15x60 mm. or eight 60x90 mm. negatives, using in either case a "120" or "620" roll. The lens (coupled to the range-finder) used on this model is a Tessar 105 mm. having a maximum aperture of f:3.3, mounted in a Compur shutter the highest speed of which is 1/400th of a second.

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Sound

Newsreel Soundman Proves His Mettle

Sound in News 10 Years Old

**... a tribute to the
newsreel soundman on
his first decade ...**

This year marks a significant anniversary—the end of the first decade of news-reel sound. In 1927 the soundman took his place alongside the cameraman and audio-visual records of the stuff that makes newspaper headlines began rolling into newsreel headquarters for dissemination to the theatre-goers of the world. It's a far-cry from that first sensational clip of Lindberg's arrival in Paris to today's spectacular and costly coverage of world events and the soundman has played no little part in the progress made.

It was natural to suppose that men constantly alert to the kaleidoscopic panorama of events in a newsreel day, would find the advent of sound a not insurmountable obstacle. Since sound was news, the newsreel found its voice. Thus, the science of sound, linked hands with the science of photography, and in the newsreel as in the feature production field, a host of new skilled workers were thrust into a bewildering new business, radically different from anything they had previously experienced.

From laboratories, broadcast studios, ships at sea, from film studios and many other sources came men dedicated to work side by side with the news-

reel cameraman. To say that the going was tough is putting it mildly indeed. It was a long hard period of practical education for the erstwhile technical man unhardened to the drama of news happening beneath his very nose. For him there were the thousand and one troubles that seemed ever present in early type single system recording outfits and the constant compromise to be made between inadequate "pick-up" and the cameraman's sense of art and com-



The newsreel soundman on the job.

position—a compromise that still defies any set rule.

For the cameraman who had recently traded his lightweight silent camera for the ponderous sound affair, it also was a period of torture. Limited in movement by one hundred foot cables, with heart breaking minutes of delay when seconds were golden—a complete break-



VAN PELT

Warners' sound department, headed by Major Nathan Levinson, has revamped the RCA console to suit their production ideas and the neat portable mixing set-up is shown here in use on the picture, "Marry the Girl."

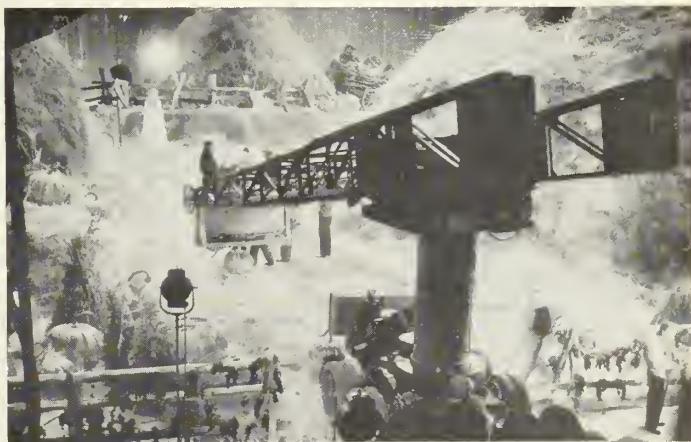
down and new set-up many times during a single story—it was little wonder that tempers often were strained to the breaking point. The great improvements made in newsreel outfits since the original equipment was assembled is a tribute to the unceasing labor of the sound and camera laboratories.

From those stilted, handicapped early shots to pictorially, dramatically and audibly effective news-picture presentations of today—a jump of ten years—the newsreels camera and microphone have scoured the ends of the earth and pushed into many strange and difficult places in search of the unusual and the news-worthy. And the thoughtful young man hunched over an assortment of dials and switches is an important element in the complicated machinery



MANATT

A pair of unusual crane shots: Left, camera and mike reach far out into the fog to capture the final scene of Warners' "Marked Woman." Right, the huge Universal crane, one of the most spectacular and mobile big units



CLARK

in the industry, is here moving in on a novel shot for Hal Mohr's first directorial effort, "When Love is Young." Real straw was imported from Sacramento and the 8-foot corn shocks from Imperial Valley.



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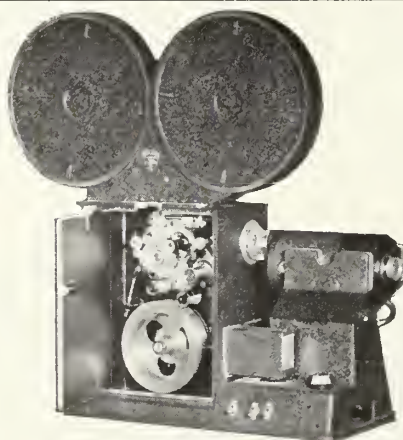
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that puts today's streamlined newsreels on theatre screens.

Today, as in the beginning, there are no alibis for sound failure. It either is on the film or it isn't—and in most cases there is only one "take." The newsreel soundman soon learned that his was a combination of many tasks. Operation and maintenance of his equipment are but a small part of the job and the average soundman devotes many quiet hours weekly to study of latest developments.

Not all of embryo soundmen were satisfied with the new profession. Although the men were selected with great care, it remained for practical experience to reveal that some were not suited by nature to the uncertainties of news on the run. Substitution lately of narration for extraneous sound has, of course, lessened the demand for men in the field. Unfortunately, many good newsreel soundmen were lost through this. For the most part, however, the men who now do the work are those who have weathered a good portion of a decade of newsreel sound recording.

For his record of ten years, not earmarked with flaming heroics but distinguished by quiet perseverance and reliability on which editors depend, for his ingenuity and resourcefulness in successfully solving the many sound problems in the field, for his ability to "take it" alongside of his buddy, the cameraman—if for no other reason, his exhibition of "guts" on countless occasions—the soundman has undoubtedly earned his title—"Newsreel Man."

HAROLD V. SMITH.

First Pix With All Sound Aids

... 'Maytime' uses newest ideas from recording to reproduction ...

"Maytime," which reunites Nelson Eddy and Jeanette MacDonald as a singing team for the third time, is not only a current box-office hit. It also rates a distinctive "first." Every improvement now available in sound technique has been brought to this production for the first time in the current widespread campaign by studio experts and manufacturers to improve sound quality.

Among the features used for the singing vehicle with its familiar "Sweet-heart" song, are the new four-ribbon push-pull valve, new reproducer head, stabilized film movement and the Shearer multiple horn system as well as the latest Western Electric sound. Studio press agents enthusiastically ballyhoo it as "all angle recording."



Herbert Stothart, brilliant MGM composer-conductor, whose lovely musical setting for "Maytime" received extraordinary recording attention.



The top singing team, Nelson Eddy and Jeanette MacDonald.



Douglas Shearer, MGM's sound head. His department received much fine comment for "Maytime."

Laboratory

Toning • Duplex Printer • pH Explained

Leo May 'Tone' All Pictures

... result of success
on 'The Good Earth'
and 'Maytime' ...

An off-shoot of the keen showmanship brain of the late Irving G. Thalberg, the sepia toning which has elicited much comment since its use in MGM's "The Good Earth" and "Maytime" is under consideration by studio chiefs as a regular feature for the company's pictures. The toning, which softens photography and accentuates contrast to an almost three-dimensional effect, was worked out by John Nickolaus, studio laboratory head, and his cohorts, when Thalberg decided that the drab story and setting of "Good Earth" needed something that would have a psychologically brightening effect. The three-dimensional quality was an unexpected by-product of the working out of the original aim.

Nickolaus believes that when all the "bugs" are taken out of the toning process, it will be so effective for nearly all types of pictures, especially musicals and outdoor films, that it will receive wide use throughout the industry. The MGM lab chief makes no claim for a brilliant discovery in working out the process, since the idea of producing effects by chemicals that would react on the silver salts on the film has long been known in the industry. Around the studio, the toning is known as "sepia platinum," the result of a press agent's inspiration.

Creditable job done by the MGM lab was in working out a practical system for accomplishing the toning. This required the careful working out of the chemicals to be used, also much experimentation in building a processing device with metals that would withstand the harsh action of the formula used to oxidize the silver salts from black to sepia. The toning is done in a separate procedure after the film has been completely processed in the usual way.

Production of the initial experimental equipment used for "The Good Earth" and the carnival scene in "Maytime" cost the studio around \$35,000 in toto. If the studio tops decide to extend the use of toning, about six perfected units would be needed. It is estimated that addition of the toning costs less than one-quarter cent per foot. Nickolaus



John Nickolaus, MGM's Laboratory head, is a gentleman, who usually knows what time it is. He's not looking at a clock, but at a recording thermometer, part of the important studio lab air-conditioning system.

and his aides were worried for a time about the effect on film-recorded sound, but there has been no bad effect on recording and in many instances a sharpening and rounding of the sound resulted.

The MGM lab chief emphasizes that the toning process is in no sense an attempt to compete with color. In fact, the aim is to give audiences a feeling of increased pleasure from photography without making them directly conscious of the source.

An important problem affecting the process is that the prints must be replaced with new ones after around 28 showings. This was determined in tests at the Carthay Circle during the current world premiere run in Hollywood of "Good Earth."

Versatile Printer

... new Duplex has wide
range; is automatic ...

After years of study and experimentation, starting with the first reduction printers 20 years ago, the Duplex Company is ready to announce production on what will be known as the Duplex Universal Reduction Printer.

This is a modernized optical printer, the reduction and enlarging being done through prisms. The printer will reduce 35 mm negative to 16 mm positive and will enlarge 16 mm negative to 35 mm positive, with the additional advantage that it may be used as a contact printer for color work, fully justifying its label of "Universal".

The manufacturer announces that there will be embodied in this machine

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PHOTOGRAPH



LIPPMAN

An unusual shot of the Shangra-La set in Columbia's current Frank Capra production, "Lost Horizon."



MCALPIN

Camera and mike setup for a bobsled scene in Paramount's "I Met Him in Paris," for which a company of 250 went on a location jaunt to Sun Valley Lodge, Idaho.



Spectacular climax production number of Universal

The Camera Clicks

from Big Pictures of Columbia, Universal, MGM, Paramount

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ERNATIONAL



Sensational "informal" from Paramount's Extra-A, "Souls at Sea."

LOBBEN



LOBBEN

Gary Cooper goes into action in a scene from Paramount's "Souls at Sea."



Flashes direct from film of MGM's sea spectacle, Kiplings "Captains Courageous." Left, racing fishing schooners. Right, unusual composition.



LOBBEN

The camera crew finds unusual perspective for the Paramount sea yarn.



FREULICH

Odd mirror effect still from Universal's "The Road Back."



BUI

Tracy, Bartholomew, Barrymore in "Captains Courageous."



ESTABROOK
"Town."

● a beautiful
negative and
fine prints reveal
... picture value.



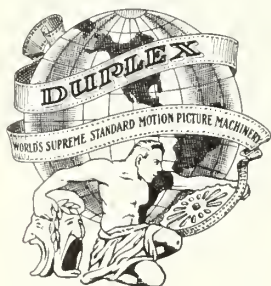
International Laboratory does the finest quality of 35 mm. developing and printing—with the most up-to-date facilities—operated under the safest conditions in the industry. A highly specialized staff of long years experience is continuously ready to serve you.



International Cinema,
Inc.

6823 Santa Monica Boulevard
Hollywood, California, U.S.A.

Telephone Cable
HOLLYWOOD 3961 Incinema



Color Printers
Reduction Printers
Complete Laboratory
Equipment

Duplex Cinema Equipment

4572 Santa Monica Boulevard
HOLLYWOOD, CALIFORNIA

We Buy Film Scrap

We Destroy the Picture

Horn, Jefferys & Co.

Burbank, California

Burbank 2121 ● HEMP 1622

everything pertaining to reduction work from 35 mm to 16 mm. It is supplied with regular automatic light change of wide range density.

The machine is particularly valuable for laboratories turning out any volume of 16 mm work in that it is automatic and constructed for quantity. One of the outstanding features is the making of lavender negatives and handy adaptability for color work.

The printer is of rugged construction and will carry the usual Duplex guarantee. It is intended to last for years without any mechanical attention and the company states that they will be supplied at a price within the reach of even the small laboratory.

Importance of pH in the Lab

... first of three vital
articles on scientific
control of prints ...

(D. K. Allison, author of this series, is a new addition to The International Photographer's contributing editors. A graduate of Caltech, he pioneered the development and application of complete chemical control in process operations as Chief Research Chemist for Multicolor Films. For the past four years, as vice-president of Chemical and Research Corp., he has been active in pH measurement and control, and has developed instruments and methods used in some of the largest manufacturing plants in the country. This current series is invaluable information for everyone engaged in film lab work.—Ed.)

When sound was added to pictures, one of the "musts" demanded by this new dictator was uniform and controllable film processing. In the good old days of silents, almost any quality of negative and picture in which it was possible to recognize the faces on the screen was acceptable, but when the hyper-critical photo-electric cell began to scan the film, we had to learn many things about film development and treatment that we had never known before. Densitometry and sensitometry, gamma, definition and grain-size became watch-words, then film processing started to become an exact science.

Parallel with the development of sound pictures has come the development of the color pictures; more slowly, perhaps, but just as surely. Here again new standards of precision in processing rendered old control methods inadequate. Progress in color has gone hand in hand with progress in laboratory control. Color laboratories today all have specialized chemical control departments. Degree of excellence in product is a measure of the degree of thoroughness of control departments.

Elements under chemical control in motion picture processing are tempera-

ture, concentration, and pH. In early work done by the author and others in the development of chemical control methods for color motion picture processing solutions, temperature and concentration were given primary consideration. The element pH was measured and controlled, largely because we had found it important in other industries. However, it soon became apparent that pH is the most important variable in the function of a solution; temperature and concentration became mid-gets compared with this giant of the chemical trio, and pH control bids fair to become the key to all efficient processing, whether black-and-white or color.

It is the purpose of the three installments of this paper to describe: (1) significance of pH; (2) how it is measured; (3) application of pH control to motion picture processing.

The term "pH" is a symbol, and like all symbols, it is a way of saying much in little. When considering the mathematical significance of pH, it is well to remember the admonition of the great Michael Angelo: "Learn your anatomy, and then forget it." In industry as in art, the value of pH lies not in remembering what it stands for mathematically, but rather how to apply it to our problems. pH is the negative logarithm of the hydrogen ion concentration of a solution. The use of the term was first proposed by Sorenson in 1909 (Compt. rend. Lab. Carlsberg 8, 1, 396), as a convenient abbreviation for the logarithmic exponent of the hydrogen ion concentration. Sorenson published in French, and the French for logarithmic exponent is "puissance." Taking the initial letters of the two words "puissance" and "Hydrogen," we have pH, and it was from this source that the symbol was derived.

pH, therefore, is a method of expressing the hydrogen ion concentrations of solutions; but the reader may well ask, what are hydrogen ions? As is well known, water is composed of hydrogen and oxygen in the ratio of two atoms of hydrogen to one of oxygen, as shown by its chemical formula, H_2O . In pure water an extremely small fraction of the atoms are not rigidly combined, but are free to move independently; however, the splitting of the molecules takes such a course as to yield hydrogen, H , and hydroxyl, OH , this latter group being obviously composed of oxygen and the remaining hydrogen. The atoms or groups carry minute electrical charges, and are called *ions* and the ionization equation of water is written, $H_2O = H^+ + OH^-$. In pure water, $H^+ = OH^-$ and has the extremely small value of one ten-millionth of a gram per liter, or about one hundred-millionth of a per cent. The product of H^+ multiplied by OH^- is always a constant; as the hydrogen ions increase,

the hydroxyl ions decrease, and vice versa, so that knowing the hydrogen ion concentration, we likewise know the hydroxyl ion concentration.

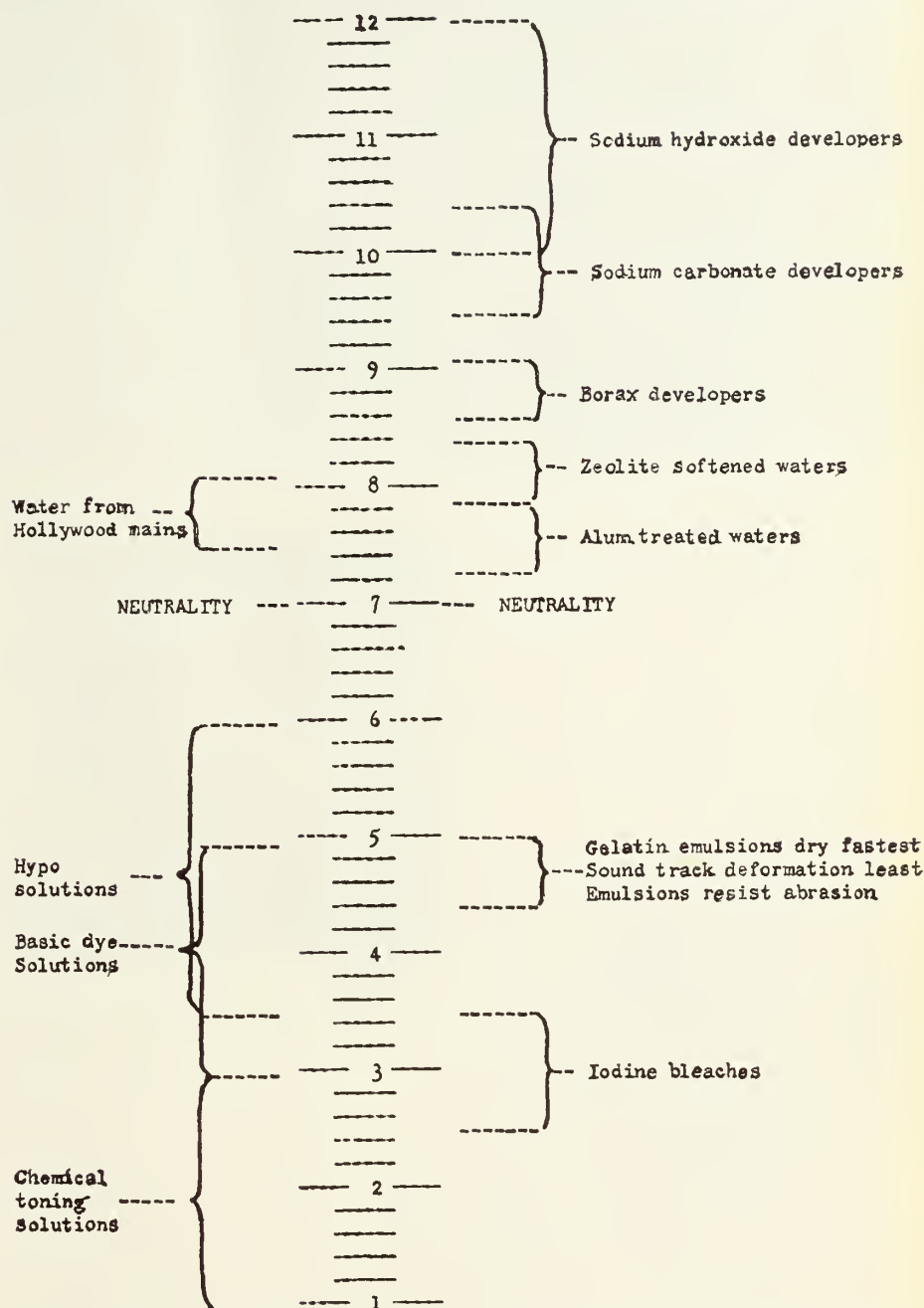
When solution of a material has a hydrogen ion concentration equal to one ten-millionth of a gram per liter, it is said to be *neutral*. When solution of a material contains more than one ten-millionth of a gram of hydrogen ions per liter, it is said to be *acid*, and when it contains less it is said to be *alkaline*. By definition, then, a substance which furnishes a preponderance of hydrogen ions when placed in solution is called an acid, and a material which furnishes a deficiency of hydrogen ions (corresponding with a preponderance of hydroxyl ions) in solution is called an alkali.

The range of hydrogen ion concentrations encountered industrially runs from ten grams per liter (approximately) to less than one hundred-trillionth of a gram per liter, or over a quadrillion fold. In early analytical work, chemists were forced to express acidities in unwieldy terms such as 4.63×10^{-3} and 8.7×10^{-11} . Addition, subtraction, and multiplication of such terms was laborious, and the final magnitudes of the values were difficult to grasp and interpret. Hence, introduction of the logarithmic pH system by Sorenson was therefore a welcome contribution, for by its use, we are able to employ a simple series of numbers from 0 to 14 to express a range of hydrogen ion concentration of one hundred trillion fold.

Accompanying this article is a chart graphically showing pH values encountered in motion picture processing solutions. The use of the logarithmic pH system for the representation of hydrogen ion concentrations is not only simpler, but it gives a much truer picture of the actual state of affairs. An increment in hydrogen ions of only one ten-millionth of a gram per liter may affect a reaction just as profoundly in the neighborhood of neutrality, as an increment of a tenth of a gram of hydrogen ions will affect a reaction in a solution already strongly acid.

Earlier methods for the measurement of acidities were based upon titration. In this procedure, a measured quantity of the sample whose acidity is to be determined is titrated (balanced) against a standard solution of known strength, using an indicator dye which changes color at the point of equivalence to establish the "end-point," or balance point. Ratio of the volume of the sample to the volume of standard alkali required to balance is an indication of the total acid present. However, it soon became apparent that the total acid present in a solution is not the significant factor. Two solutions having the same total acidity by titration often behave very differently in their actual acid properties. When we drink lem-

pH RANGES IN FILM PROCESSING



onade we drink a solution containing 10% citric acid and find it palatable, but it is doubtful that any of us would be foolhardy enough to drink 10% hydrochloric acid; yet both solutions contain the same amount of total acid. We know that a hypo solution acidified with the correct proportion of acetic acid remains stable and free from sulphur precipitation. The same hypo formula, with sulphuric acid substituted for the acetic acid, will soon decompose and deposit sulphur.

In both of the above instances it is *active* acidity, rather than *total* acidity that is important. When an acid substance is placed in solution, it may yield a greater or lesser number of hydrogen ions for a given amount of total acid. It is the number of hydrogen ions liberated which determines the active acidity, and a substance which

furnishes a high active acidity is called a "strong" acid; a substance which furnishes a low active acidity is called a "weak" acid. Listed below are a series of solutions of different acids. All of the solutions have the same total acidity, and from the accompanying hydrogen ion concentrations (active acidities), and the corresponding pH values, may be seen the vast difference in the actual strengths of the acid solutions.

Acid	H-Ion Concentration	pH
Hydrochloric	0.08 gms/L.	1.1
Sulfuric	0.063	1.2
Orthophosphoric	0.031	1.5
Citric	0.0063	2.2
Acetic	0.001	3.0
Carbonic	0.0001	4.0
Boric	0.0000063	5.2

Similarly, titration of alkaline solutions to give results in terms of total alkalinity seldom yielded data which could be correlated with the actual ob-



served phenomena. Borax and carbonate developers having the same total alkalinity behave far differently indeed in the processing room, and if concentration of developing agents, *i. e.*, the elon, hydroquinone, etc., are the same, the difference in the performance of the developers is due to differences in *active* alkalinity. Given below is a list of a number of solutions of alkalis, all of the same total concentration, with their corresponding hydrogen ion concentrations and pH values.

In the examples of solutions of acid and alkali given above, we can see how very misleading the values for acidity obtained by titration can be; all of the solutions would show exactly the same total acidity or alkalinity by titration, and yet in the case of both acid and alkali the solutions listed cover a range of a hundred thousand fold in actual acidity.



side, pH 8 is ten times as alkaline as pH 7, pH 9 is ten times as alkaline as pH 8, etc. Industrially, the smallest significant unit is probably 0.1 pH

Then and Now. Identical stills from original and current productions of "23½ Hours Leave." Douglas MacLean starred in original, produced the new version, with Jimmy Ellison in his role. Thomas H. Ince first made it 19 years ago. Grand National releases new version. The late Bert Cann, ace Ince photographer at time, shot it with a hand-cranked "box." Jack Mackenzie lensed the new version. He is standing with Director Jack Blystone at left. Stills for new version by Parrish.

Alkali	H-Ion Concentration		pH
Sodium hydroxide	0.00000000000001	gms/L.	13.0
Trisodium phosphate	0.00000000000001		12.0
Sodium carbonate	0.00000000000025		11.6
Ammonium hydroxide	0.0000000000008		11.1
Sodium ses carbonate	0.0000000000008		10.1
Sodium borate	0.0000000000063		9.2
Sodium bicarbonate	0.00000000004		8.4

The pH scale actually covers a range of approximately sixteen units but the extremely concentrated solutions at either end of the pH scale are seldom encountered industrially, and universal practice limits the pH scale to pH 0 to pH 14. pH 0 corresponds to normal acid (one gram hydrogen ion per liter) and pH 14 corresponds to normal alkali; pH 7, half-way between, corresponds to neutrality. pH 7 is therefore a base line; solutions below pH 7 are acid, and solutions above pH 7 are alkaline.

Each unit change in pH corresponds to a ten-fold change in hydrogen ion concentration. Thus pH 6 is ten times as acid as pH 7, pH 5 is ten times as acid as pH 6, and one hundred as acid as pH 7, pH 4 is again ten times as acid as pH 5, etc. On the alkaline

unit, although results are often reported to 0.01 pH unit. As a matter of fact, an accuracy of 0.01 pH is often desirable, since absolutely reliable results in the first decimal place require that the uncertainty be in the second decimal place. Accuracy in pH measurements is absolutely essential, particularly when we realize that a change of only 0.3 pH unit corresponds to a two-fold change in active acidity.

All operations of motion picture processing are carried out in aqueous solutions, and all aqueous solutions react in accordance with the hydrogen ion concentration, or pH. The fact that we have only lately come to realize this makes it none the less true. Differences in the characteristics between borax, carbonate, and caustic developers are largely attributable to the differences in

the pH of the developers caused by the different active alkalinities of the materials used. The developing agents—hydroquinone, elon, metol, pictol, etc.—are acids, and they act as developing agents only when converted into their sodium salts in alkaline solution. The pH of the solution determines to a major extent the reduction potential of the developing agents, and the course and characteristics of the developing action can be largely controlled by the pH of the developer, as will be shown in a later paper.

In a hypo solution, the decomposition of the hypo (sodium thio-sulfate) to give free sulphur is critical at pH 4. Sodium thiosulfate is stable at all pH values above pH 4, independently of the presence or concentration of sulfite. At pH 4, however, the sodium thiosulfate decomposes very rapidly in the absence of sodium sulfite or bisulfite, and as the pH is decreased a constantly increasing concentration of sulfite is required to insure stability.

Finally, even the gelatin of the emulsion is not inert with respect to the pH of the solution, and the hydration of the emulsion, the toughness, even the gamma, are affected and sometimes largely determined by the pH of the solutions through which the film passes. These and many other phenomena and their relationship to efficient processing will be more fully described and explained in later papers.

The accompanying chart illustrates the pH ranges commonly encountered in motion picture processing operations.

Lighting—Sets—Decor

M-R Solarspots • Repeating Flash Bulb • The Boys of "Thirty Seven"

Lighting Equip. Modernization

**... Solarspot lamps
engineered directly
for camera needs ...**

Within the past year and a half, an entirely new type of lamp, born and bred of film studio heritage, has come into wide use. An outstanding example is the "Solarspot," evolved by Mole-Richardson and engineered on radically new principles, with the specific problems of the cameraman in mind. Paramount feature of these lamps is silkily smooth distribution of light at all beam-spreads, especially when the beam is spread out to the degree most often used in studio lighting. Illumination is even

from one edge of the beam to the other. There are no "hot spots" or shadows, and the beam may be flooded out to a spread twice the widest beam possible with a mirror-lamp. At the same time, when concentrated to a spot, the beam of a "Solarspot" is highly potent.

This is accomplished by a new type of lens, the "Morine" Fresnel-type. It looks as though someone had tried to make a bull's-eye target out of a big disc of glass. Actually, it is half-a-dozen lenses rolled into one. Each of the circular "steps" has its own lenticular curvature, suiting it to just the work that part of the lens has to do. Behind this lens is the lamp-globe, and behind the globe is an efficient spherical (not parabolic) mirror, which picks up the light radiated by the rear side of the globe, and tosses it back to where the lens can pick it up and use it.

The new lamps are available in four sizes. First to make its bow was the Junior Solarspot, a 2000-Watt unit that is supplanting the familiar 18" mirror lamp. Next came the Senior Solarspot, a 5000-Watt unit. Available this month are two brand-new, smaller Solarspots: a 500-Watt "Baby Solarspot" and a 1000-Watt intermediate size. It is claimed that these last two, competing directly with the familiar condenser-lens type spotlights, will outperform their opposite numbers two to one.

Other new styles and types of lighting equipment from various manufacturers will be covered in news and pictures in coming issues of INTERNATIONAL PHOTOGRAPHER.



Left: A Mole-Richardson "H. I. Arc" lamp, a mainstay in color photography. Center: Close-ups of the Junior and Senior Solarspots. Right: Mole-Richardson 5 KW Senior Solarspot.

Repeat Flash Bulb

**... G-E continuous still
shot device out soon ...**

Long sought by portrait photographers, a flood-flash lamp that repeats indefinitely and gives a cooler, more economical and effective light source, is nearing perfection at General Electric laboratories at Nela Park in Cleveland. The new lamp is about as effective photographically as the same company's No. 20 Photoflash lamp, but it can be flashed hundreds of times, whereas the usual flash lamp flares but once.

The new development combines a 100-watt mercury lamp with a compact control mechanism. Experiments have proven that the lamp has ability to withstand an untold number of sudden powerful doses of electrical energy, while





THE BEST IN LIGHTING

MEANS



SOLAR SPOTS



Mole-Richardson
INC.

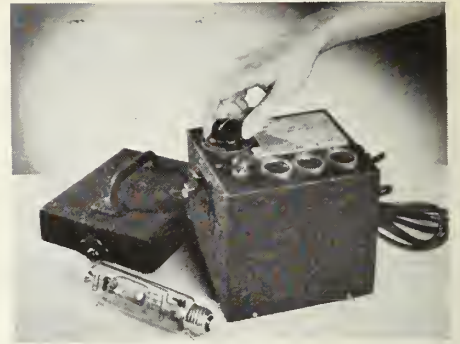
941 No. Sycamore Ave.
HOLLYWOOD, CALIF.



giving off a brilliant lightning-like flash with each "jolt." Flashes can be made to occur at will, within as brief a time as 1/60th of a second, or if desired, peak brilliancy of several million lumens is possible.

Outer bulb of the lamp has a diameter of 1½ inches and an all-over length of less than six inches. It consists of a tubular-shaped protecting envelope of soft glass. The inner bulb, also tubular, but about the size of a stubby fat thumb, is made of extra-hard heat-resisting glass. This hollow glass "thumb" is only two inches long and about an inch in diameter. Within is a small amount of mercury and enough argon gas to "start" the lamp. Chief purpose of the outer bulb is to protect the inner bulb from drafts and to let the heart of the lamp operate at reasonably uniform temperatures.

Unlike the present 250 and 400-watt



Control mechanism, size of a lunch-box, a new G-E Flood Flash lamp.

Unretouched picture of "Taffy," Cocker Spaniel, stopped with G-E Flood Flash Lamp at 1/50th second.

mercury lamps, this bulb-in-bulb small edition operates from either a 110-115 or 120 volt line and without need of a voltage step-up for starting. It operates at about two atmospheres pressure.

Those Fellows In Over-alls

... introduction to a
series on the work
of 'Thirty Seven'

Least understood and most ramified in its functions among the Hollywood locals of the International Alliance is "Thirty Seven." Described officially as Studio Mechanics, often referred to as "gripspropsgafferssspecial effectsminiatremakersetcetc" in one sliding breath, this group of around 5,000 skillful craftsmen plays many unusual roles in behind-the-scenes story of picture making. But so complicated and so manifold are the activities of members of Local 37, that through all the years, in the studios and among the members, their families and friends, the organization is known as just plain "Thirty Seven."

"Thirty Seven" has eight distinct and different major branches of service. The work of each is as important in the making of a picture as any other. Each branch dovetails harmoniously with the other to the extent that it is virtually impossible to distinguish where one stops and the other starts. In future issues of the International Photographer, these various departments of "Thirty Seven" will be explained in details to the end that credit be given where credit is due and that other branches of the industry may know the workings of these departments and the many services they can contribute to the making of outstanding film produc-



Burt Spurlin, MGM prop.



This scene from Universal Pictures' big new musical "TOP OF THE TOWN" shows why we say . . .

...there is a G-E MAZDA LAMP FOR EVERY LIGHTING NEED

This behind-the-scenes shot of the spectacular Moonbeam Room set, said to be the largest ever built in Hollywood, suggests some of the lighting problems which had to be met in filming "Top of the Town" . . . and shows how the flexibility of G-E MAZDA lamps helps solve them.

With a wide range of types and sizes, G-E MAZDA lamps provide light to paint scenes exactly as your artistry dictates . . . to create lighting effects difficult or impossible with other illuminants, especially in places where

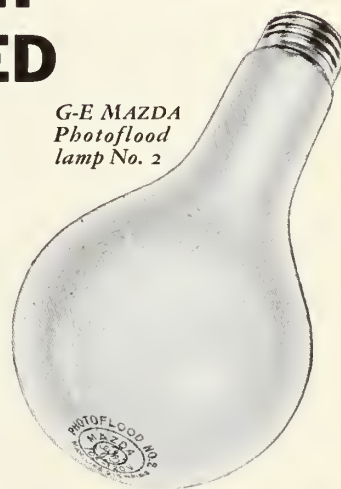
space is limited. In "Top of the Town," the versatility of these lamps also helps to create a very interesting new effect.

The Stars Actually Twinkle

Thanks to hundreds of G-E MAZDA Photoflood lamps No. 2, hung on cords behind the stars in the background curtain, the stars actually twinkle.

No matter what your lighting problem, there is a G-E MAZDA lamp to help you solve it. Are you benefitting fully from this flexibility? General Electric Co., Nela Park, Cleveland, O.

G-E MAZDA
Photoflood
lamp No. 2



GENERAL  ELECTRIC
MAZDA LAMPS



The spectacular and beautiful "Maytime" Napoleon's ballroom setting.

tions. With brevity in mind, this current comment is intended merely as a general introduction.

Upon the men of "Thirty Seven" rests much creative responsibility for making a motion picture a success as entertainment. Remember the fog sequences in "The Informer", the battle scenes in the "Big Parade", the earthquake and fire scenes in "San Francisco"? Credit that work to members of "Thirty Seven." No fanfare of trumpets or brass bands, no clashing of cymbals or screen credits accompanies their work but it is vital to every picture, an integral part of the production.

Did you see the "White Hunter" and its jungle sequences? The finger of pride points to members of "Thirty Seven" who created that jungle within an hour's jump from Los Angeles, and speaking of miracles, consider the current super of supers, "The Good Earth," now playing at Carthay Circle in Hollywood. China and its rice fields grew at the hands of members just outside of the city limits of Los Angeles. Storm scenes such as appeared in "Sea Devils" were created in a water tank by men who know the game. Stars sitting in a stationary taxicab while famous cities of the world pass by, sand storms photographed at a given cue or blizzards and snow storms under cover in a well protected stage on the lot—these and more are born at the will and hand of members.

distinguished the entertaining skating scenes of Sonja Henie's initial starring vehicle, "One in a Million," to the sensational scenes with burning metal in the steel mills story, "Magnificent Brute," which starred Victor McLaglen, the industry benefits and entertainment is served through the inventiveness and labor of "Thirty Seven."

The International Photographer, in addition to the presentation in future

issues of a detailed and copiously illustrated account of the different departments and achievements of "Thirty Seven" also desires to develop a regular monthly exchange of ideas and news of the field. All members of "Thirty Seven" are invited to submit news and picture contributions for publication in coming issues of International Photographer.

—L. C. G. BLIX



Concocting a shell-blasted farmhouse for "The Road Back" at Universal.

FREULICH

Projection

New Standard • New Base • Projection School

Two-Way Horn Elec. Standard

... Acad Research Council releases its committee report ...

Answering a number of important points in connection with the new two-way horn sound reproducing systems, a special report embodying standard electrical characteristic for the new systems in theatres is now in the mails from the Academy Research Council to projectionists in the United States and Canada. The standard is the work of a special ARC sub-committee, of which John Hilliard of MGM was chairman.

Seeking to strike an average that would best suit a majority of theatres today, the committee prepared and ran a carefully selected test reel of 250 feet of diverse sound recordings from the various studios at Los Angeles theatres. The committee believes the standard arrived at will give the best reproduction of film production from all studios today and states that as further improvements are made, similar compensations can easily be made in all modern the-

atre reproducing systems at nominal cost.

The committee acknowledged the co-operation of ERPI and RCA with contributions of equipment, time and knowledge. The report has been submitted to and been approved by the two companies and the directors of sound of the eight major lots.

Highlights of the report are:

"The two way reproducing systems for which this characteristic, indicated below and by the associated curve which is a part of these specifications, is recommended, are:

TYPE I—Mirrophonic system using 594-A mechanisms (loud speaking telephones) (metal diaphragm) and TA-4181-A low-frequency mechanisms (loud speaking telephones).

TYPE II—RCA system using MI-1435 (metal diaphragm) and MI-1432-A low-frequency mechanisms.

TYPE III—RCA Lansing equipped system using 284 (metal diaphragm) and 15X low-frequency mechanisms.

TYPE IV—RCA system using MI-1428-B (bakelite diaphragm) and MI-1432-A low-frequency mechanisms.

"This characteristic is valid for measurements made at the output of the power amplifier, including the low-pass filter, with a resistance equivalent to the speaker load, using the Electrical Research Products, Inc., test film ED-20 (the correction factor, printed on the back of the can in which this test film



The new Super Simplex Pedestal for projectors, features streamlining deluxe. The new model has every type of adjustment for modern projection requirements and comes with all electrical equipment included. Support brackets fit any type ERPI or RCA sound equipment. Simplex is handled by National Theatre Supply.

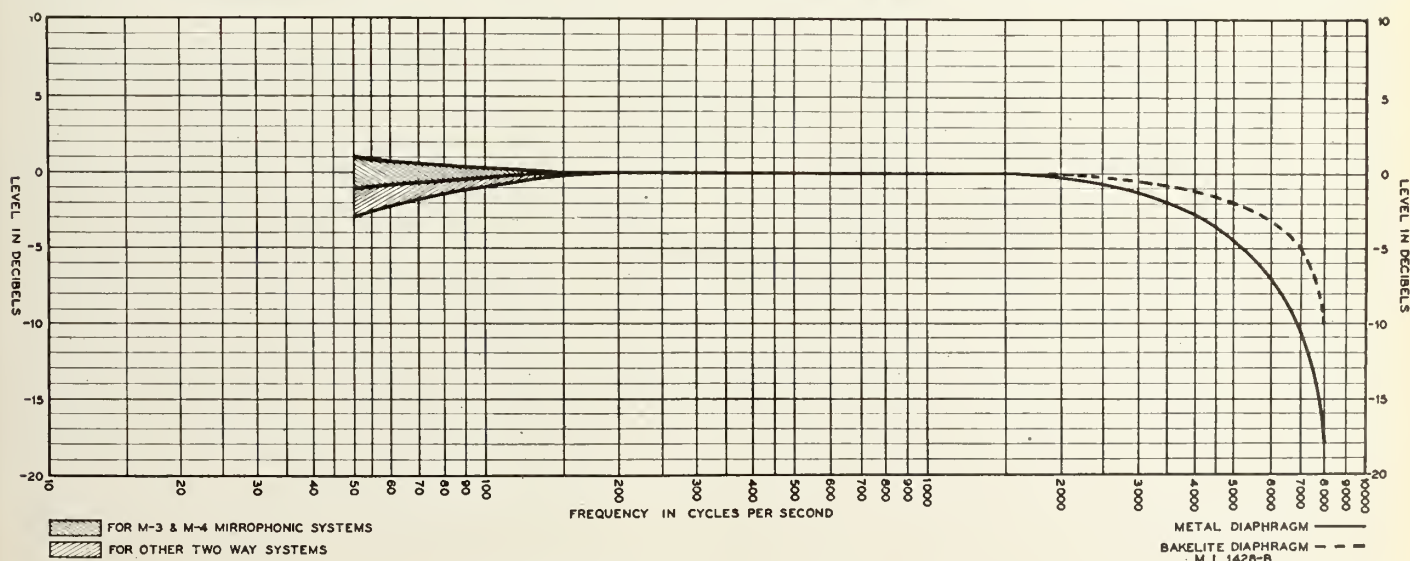
is furnished, indicates the deviation from constant percentage modulation for each frequency) or the RCA test film Catalogue No. 27637, and is subject to modifications to fit special acoustic conditions which no doubt exist in many theatres, due to the fact that the reverberation time or other acoustic characteristics are not optimum.

"The following table indicates the

STANDARD ELECTRICAL CHARACTERISTIC

From Academy Research Council

For Two Way Reproducing Systems in Theatres



ELECTRICAL RUN

Measured at the Output of the Power Amplifier with a Resistance Equivalent to the Speaker Load Using ERPI Test Film (ED-20, Corrected), or RCA Test Film (Catalogue No. 27637)

(See Page 32 for Test Details)

characteristic for both the metal and bakelite types of diaphragms used on the high-frequency mechanisms.

Frequency	Metal Diaphragm Mechanisms	Bakelite Diaphragm Mechanisms
50	+1 to -3	+1 to -3
100	+ ½ to -1	+ ½ to -1
200	0	0
1000	0	0
1500	0	0
5000	- 4½	- 2
7000	- 10½	- 5
8000	- 18	- 10

"A tolerance of ± 1 db is specified for any of the above gain-frequency measurements.

"With the presently available equipment as specified, operating with the Standard Electrical Characteristic, it is necessary in some instances that the sensitivity of the high- and low-frequency band be relatively adjusted to obtain a flat acoustic response on both sides of the crossover. This adjustment usually takes the form of attenuating the high-frequency band by means of the taps in the dividing network to varying degrees from 0 to 5 db, depending upon the relative efficiency of both low- and high-frequency units and the specific acoustic properties of the auditorium involved.

"Typical values are as follows:

ERPI—Mirrophonic system, attenuate the high-frequency band 2 to 4 db.

RCA—MI-1435 and MI-1432-A, attenuate the high-frequency band 0 to 2 db.

RCA—Lansing equipped, attenuate the high-frequency band 0 to 2 db.

RCA—MI-1428-B, MI-1432-A, attenuate the low-frequency band 0 to 2 db.

"It should be remembered that the type and condition of screen used in the theatre will in a measure affect the high-frequency response of the reproducing system."

The list of productions currently hitting release dates that were recorded

to fit the new standard electrical characteristic includes: "Lost Horizon," Columbia; "Maytime," MGM; "Swing High, Swing Low," Paramount; "Midnight Taxi," 20th-Fox; "Michael Strogoff," RKO-Radio; "History is Made at Night," UA; "Top of the Town," Universal; "Green Light," WB-1st National. Succeeding releases of all companies will be recorded to fit the standard.

Projection School

... L. A. and San Berdoo IA locals conduct classes ...

Now in its second year, an intensive regular schooling in projection practice and the latest developments and improvements in the field is being conducted by Projectionists Local 150, IATSE, Los Angeles, in cooperation with the

Frank Wiggins Trade School. Varied classes are held five nights a week at local headquarters, 1489 West Washington Boulevard, in the heart of the film exchange district. The school is partly financed by Federal vocational funds, which are administered by the Los Angeles city school board. Tying in with the Los Angeles school is a training course conducted by the San Bernardino Projectionists Local 577. Classes are held fortnightly and students also engage in frequent informal technical discussions.

William Comyns is the instructor for both the Los Angeles and San Bernardino schools. He is a veteran sound and projection engineer and is a member of the Sound Local 695, IATSE, and of the Radio Telegraphers' Association. The Los Angeles IA local has always been noted for its progressive attitude on technical matters.

Radio

A War of Claims • High Definition Television

Hectic Air Scene

... nets sneer, MPTOA protests; expansion ...

Not since the days when Lewis J. Selznick took paid ad space in the film trade papers to blister competitors has show business seen such a name-calling tussle as that now on between Columbia Broadcasting System and the Mutual network's affiliates, the Don Lee chain,

over "who is what" in radio coverage of California's free-spending population, as a result of coast station realignments first of this year.

Both sides are pot-shotting each other with insinuations, implications and downright gauntlet-hurling, culminating in the Don Lee ad reproduced herewith, bearing the heading, "Achilles Had a Heel," and winding up with an admonishing "come, come, CBS," in answer to a double-truck CBS statement.

The war of claims and counter-claims

OF THE
CALIFORNIA RADIO AUDIENCE

IN SAN FRANCISCO

AND KSFO SPURTS AHEAD!

COLUMBIA PACIFIC NETWORK

THE COLUMBIA BROADCASTING SYSTEM

NEW YORK • CHICAGO • SEATTLE • SAN FRANCISCO • HOLLYWOOD

ACHILLES HAD A HEEL

SAYS THE PRESS

SAYS THE PUBLIC

DON LEE Golden Group

APPROXIMATELY 100,000 LISTENERS

STATIONS:

KFI	Los Angeles	KYAC	San Francisco
KABC	Los Angeles	KGO	San Francisco
KABC	Los Angeles	KGO	San Francisco
KABC	Los Angeles	KGO	San Francisco
KABC	Los Angeles	KGO	San Francisco

APPROXIMATELY 100,000 LISTENERS

"my uncle . . . can lick . . . your uncle."

is an amusing sidelight on the sensational expansion of the West Coast as an air production center, which has jumped Hollywood to a spot second only to New York as the emanation spot for bigtime programs.

So important is the Hollywood air rush, with its consequent use of screen star names to sell nationally advertised products from soaps to motor cars, the Motion Picture Theatre Owners of America devoted a goodly portion of their annual convention at Miami last month to the topic. The MPTOA finally did what it has been threatening for nearly a year; openly denounced the star appearances as injurious to the box-office and demanded that the major companies "do something about it."

Meanwhile, CBS already has construction under way for its new Hollywood headquarters on the old Christie lot at Gower and Sunset, NBC rushes plans for expansion to Sunset and Vine, and the Don Lee group is considering establishing a Hollywood location.

The Don Lee Tele Receiver

... complete official
information on how
to construct one ...

(This is the first information of this type released on the new high definition television. It has been prepared by the Don Lee Television Staff, under the direction of Harry R. Lubcke, and will appear in *The International Photographer* in two parts. The receiver described herein is constructed of standard parts and represents a simple combination that

can be put together by an experienced amateur or short-wave listener. It has been built and tested on regular Don Lee transmissions.—Ed.)

The images broadcast by the Don Lee transmitter are composed of 300 lines repeated 24 times per second. In common with all high definition television transmissions, the receiver for displaying the images must tune very broadly as compared to the usual communications type receiver used for receiving voice and music transmissions. A high intermediate frequency must be employed and band-pass transformers used to provide sufficient band width. In the "audio" section of the receiver, abnormally low values of plate resistors must be used and great care exercised to keep the stray capacitance of wiring and components to a minimum.

The diagram of the receiver is shown in Figure 1. It is of the usual super-heterodyne type receiver embracing the design features set forth above. The antenna is indicated by the tubing at the upper left, separated in the center and connected to L-1. The separate lengths of the tubing should be 63 inches long and $\frac{1}{4}$ inch or more in diameter. They should be joined mechanically by an insulator two or three inches long. The leads running from the antenna to L-1 indicate a length of 70-ohm cable, known as "E0-1," or the rubber-covered parallel pair feeders known as the "Lynch Little Giant Killer Cable." It is desirable that the feeder should extend perpendicularly from the antenna for 5 feet or more. The antenna end of the feeder is "famed out" for 6 inches and one conductor attached to each 63-inch length of the antenna. The receiver end is brought in through insulating bushings to the one to two turn coil, L-1.

The first resonant circuit, L-2 C-1, should be of "high-loss" construction, that is, no effort should be made, as is usually done, to keep the coil away from shielding, or use the best quality variable condenser. The radio frequency resistance of this circuit must be considerable to insure that the high frequency components of the wide image sideband will not be attenuated. This can be accomplished by using components of ordinary quality or by shunting a fixed resistor across the circuit. The components should be mechanically excellent, but the use of bakelite coil form, bakelite pieces for coil support, and condenser end plates, is definitely allowable. This circuit, with vacuum tube VT-1 comprises the super-heterodyne first detector or converter. This is housed in the first dark shield can shown in the front left of Figure 3. The porcelain lead-through insulator at the left supports coil L-1 and provides external binding posts for the incoming feeders. The upper of the two knobs is the tuning control and comprises the shaft and variable condensers C-1. This is one of the front panel knobs.

The knob directly below it is the volume control comprising resistor C-7 in the circuit of Figure 1. Behind the first shield is the oscillator shield, and condenser C-15 of this circuit is ganged with condenser C-1. This is accomplished by an ordinary shaft coupling. These two shields are preferably made of copper with as few joints as possible to give good shielding at ultra-high frequencies. They may be chromium, but not cadmium, plated, if desired. Cadmium plating is satisfactory for the chassis in general, and aluminum shield cans may be used elsewhere. Copper shield cans with chromium plating are an extra refinement. The remainder of the circuits of the converter VT-1 and oscillator VT-7 are more or less standard. Oscillator coil L-2 is placed over (surrounding) the grounded end of coil L-11. No difficulty should be encountered in securing ultra-high frequency oscillation with this circuit.

Coil condenser combinations C-3, L-3 and C-4, L-4 comprise the band pass intermediate frequency transformers. These should also be of "high-loss" construction. Bakelite coil forms and small wire are specified, while the condensers may have bakelite end insulators, and may be of the mica compression type. The intermediate frequency transformers are shown as the row of rectangular shield cans down the center of the chassis in Figure 3. The three 6K7 intermediate frequency vacuum tubes are shown to the right of the several stages. It is not necessary that the arrangement shown be adhered to. Increasing the space between shield cans and placing a tube between each one,

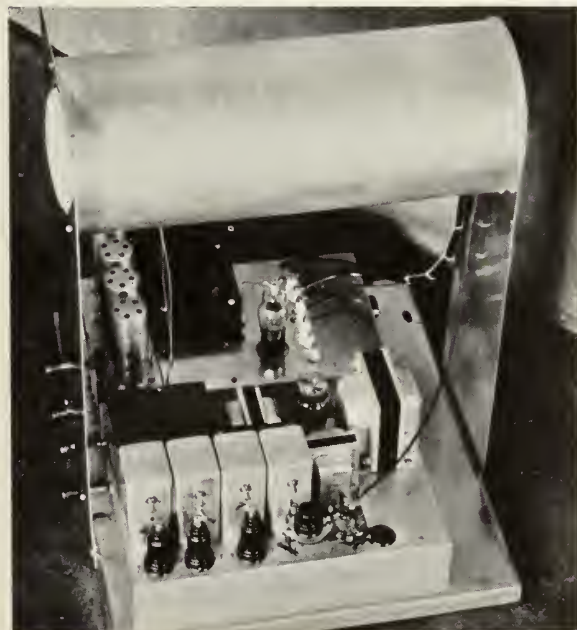


Figure 2. Complete Don Lee receiver. Superheterodyn and low voltage power supply in foreground. Cathode ray tube shielded by 7-inch cadmium plated sheet metal pipe.



HARRY R. LUBCKE

Director of Television for the
Don Lee Broadcasting System

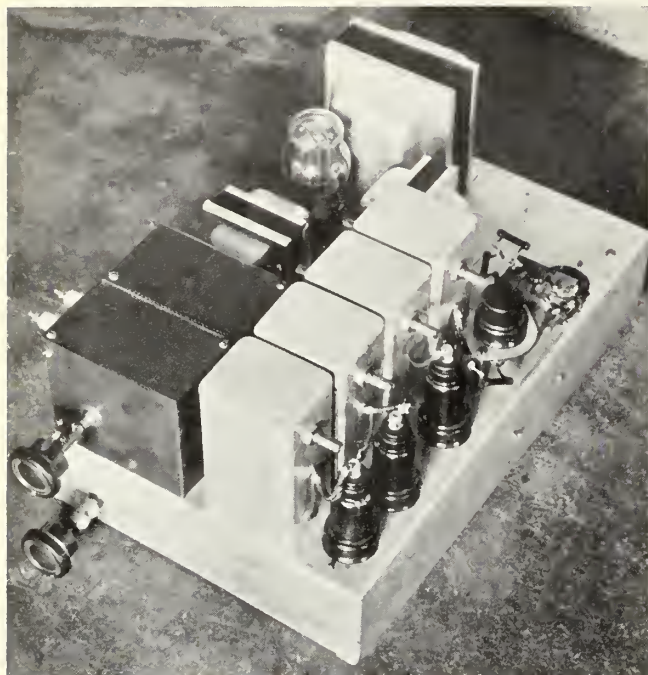


Figure 4, above. Sweep circuits and high-voltage power supply. Shafts for front of panel control of low and high frequency scanning sources. Cathode ray tube adjustments located in rear of chassis.

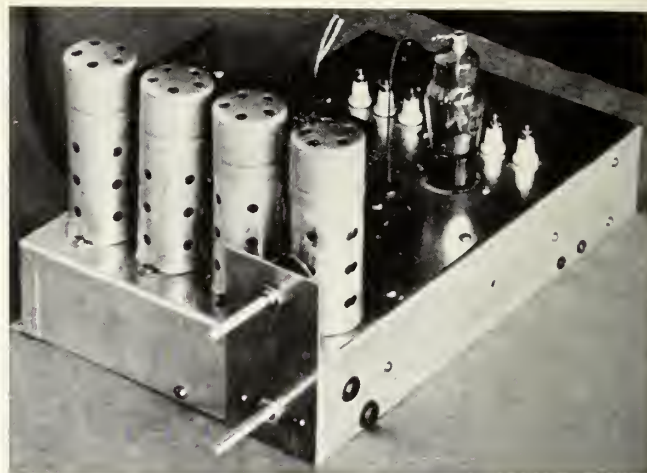


Figure 3, left. Super heterodyne and low frequency power supply of Don Lee television receiver. High-frequency circuits are housed in dark copper shield cans, intermediate frequency in aluminum cans.

or a staggered arrangement of shield cans and tubes is satisfactory.

The diagram shows three stages of intermediate frequency amplification indicated by tubes VT-2, VT-3 and VT-4, with the associated equipment. This amount of amplification is satisfactory where a moderate or strong signal is available, such as a hill-side or unobstructed line of sight location on level ground using antenna 25 or more feet above surrounding objects. Where these conditions cannot be met, an additional stage of intermediate frequency amplification is recommended. The addition is accomplished by merely constructing and installing another tube VT-3, another intermediate frequency transformer, C-3 L-3, C-4 L-4; a socket, shield can, two isolating resistors, R-37, and two by-pass condensers C-2. The adjustment of the several condensers, C-3

C-4, of each stage should be available from the outside, and they should be adjusted to give the best detail while looking at an image.

VT-5 is a diode second detector, the output of which appears at the right-hand end of resistor R-2. It will be noted that this resistor has a value of only 15,000 ohms. This resistor in the usual communications type receiver would have a value of perhaps one-half megohm. The low value here used is necessary in order to nullify the reactance of the unavoidable capacitance of the "high" side of the components and the "high" wiring to ground. It will be noted that the lead from R-2 to the grid of VT-6 is shown as a solid line, with a dotted line adjacent to it. This is to indicate that this lead, as well as others to follow, should be run in a direct manner, and as far away from the chassis as possible, so that its capacitance to ground will be small. The short metal tube in front of the last intermediate frequency transformer shield can is the diode, and it will be noted that it is above the chassis by $1\frac{1}{4}$ inches. This is for the purpose of reducing the capacitance of the wire to ground.

Similarly, the acorn triode VT-6 is elevated above the chassis. In this circuit the plate lead to the high end of resistors R-4 and R-40 and the associated components must be located as far from grounded objects as possible. Condenser C-12 and resistor R-5, coupling condenser and grid leak for the cathode ray tube respectively, can best be located adjacent to the grid terminal of the cathode ray tube rather than immediately adjacent to VT-6. The lead from the junction of resistors R-4 and R-40 to the synchronizing circuit condensers C-30 and C-31 and resistor R-33, which comprise the synchronizing cir-

cuit, and the leads to the grids of the vacuum tubes VT-11, VT-12 of the scanning sources should be of low capacitance by being short and by being removed from ground as far as convenient.

The glass tube in the rear of the chassis of Figure 3 is the 83-V full-wave rectifier. Directly behind it is the power transformer TR-2 and the chokes L-13, associated with the low voltage power supply shown in the lower left-hand corner of Figure 1. This power supply operates the television receiver and the two scanning sources.

The simple type of gas triode sweep circuit oscillator with a constant current pentode as a plate resistor has been used in the interests of simplicity. The high frequency and low frequency sweep circuits are alike, except for the value of condensers C-22, C-25, C-23, and C-26. Resistors B-18 in each circuit vary the frequency. These two controls are front panel controls, for adjusting the lock-in of both the low and high frequency sweep circuits.

The components C-30, C-31, and R-33 convey energy from the output of the receiver amplifier through circuits particularly suited to synchronize the low and high frequency sources.

Transformer TR-1, rectifier tube VT-8, condensers C-23 and C-29 and resistors chain R-8, R-9, R-10, R-11, comprise the high voltage power supply for the cathode ray tube. This is essentially standard cathode ray tube practice. However, it is notably different from ordinary receiver tube practice in that the PLATE of the cathode ray tube is grounded and the heater cathode, and grid of the cathode ray tube are the *high voltage* leads of the device. These must be treated with respect in installation, and not touched when in opera-

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Mitchell, Bell & Howell, Akeley, Debie, Universal, Pathe Cameras. B & H Eyemo and De Vry. Portable Sound Recording Outfits. Holmes Projectors, Sound and Silent. De Vry Suit Case Model Projectors. Bell & Howell 1,000 ft. magazines at \$50 each and Bi-pack adapters at \$90 each.

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Hollywood California
Cable Address: CAMERAS

tion. These leads are some 2,000 volts "below ground" potential, but whether or not such a lead is "above" or "below" ground potential by a large amount makes no difference in its ability to give a severe shock. It is improbable that there is sufficient energy in the equipment to produce fatal results unless the subject should die of fright. Consequently, if the circuits are accidentally touched, attempt to minimize the effect in the mind, which should tend to put the person in the best condition. It

is to be understood that the Don Lee organization incurs no liability of any kind in connection with such accidents or in any other matter because of the information furnished herewith. Such information is furnished free for non-commercial use, and no patent or other license is granted or may be inferred.

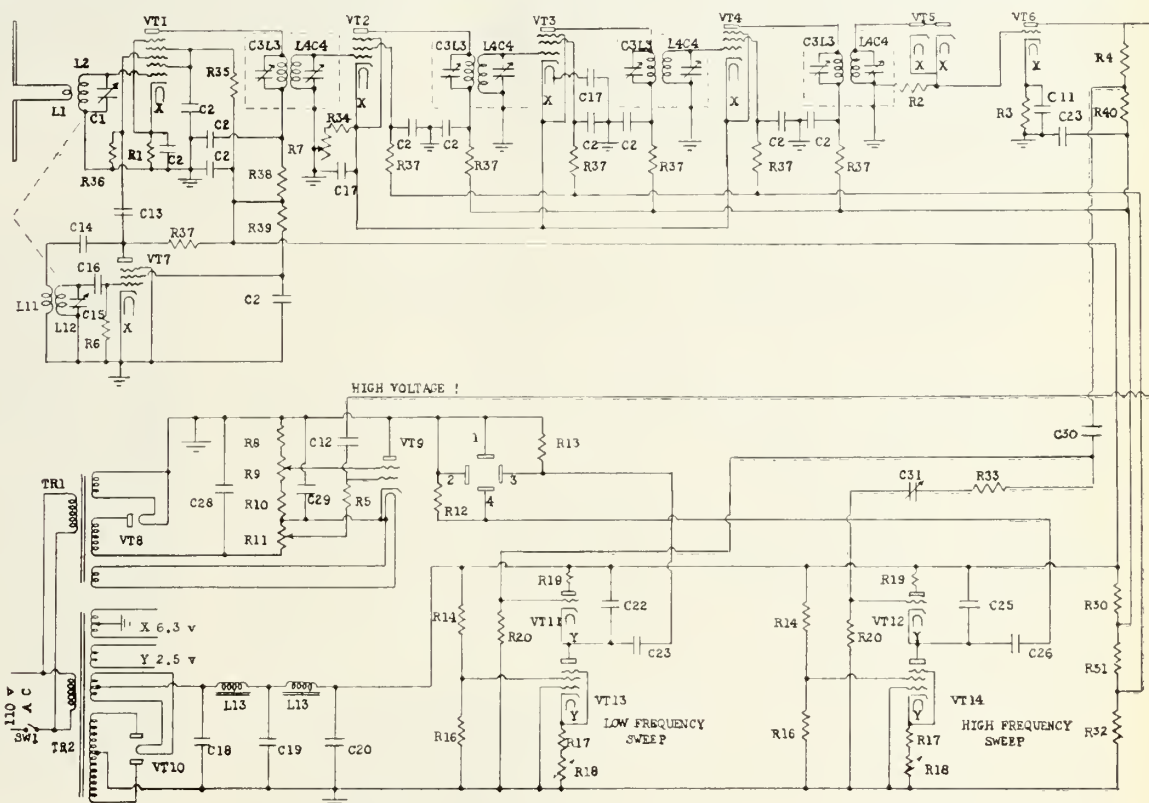
Figure 4 shows the sweep circuit-high voltage power supply chassis, with gas triodes and accompanying pentode resistor tubes shown in alignment at the front end of the chassis. Behind them

is transformer TR-1, rectifier VT-8 and porcelain lead-through insulators which carry the high voltage to the cathode-ray tube. Condensers C-28 and C-29 are shown on the small panel at the front right of the chassis. On the rear of the chassis are located controls R-9 and R-11, which control the focus and intensity of the cathode-ray tube respectively.

Figure 2 shows the completed receiver. The curving black lead in the

TABLE I

List of Parts for Don Lee Television Receiver



- R-1 500 ohm 1 watt Morrill or equal
R-2 15,000 ohm 1 watt Morrill or equal
R-3 1000 ohm 1 watt carbon
R-4 5000 ohm 1 watt Morrill or equal
R-5 1 megohm 1 watt Morrill or equal
R-6 50,000 ohm 1 watt carbon
R-7 5000 ohm 4 watt pot. wirewound
R-8 1 megohm 3 watt carbon
R-9 0.5 megohm 1 watt potentiometer
R-10 150,000 ohm 2 watt carbon
R-11 0.1 megohm 1 watt potentiometer
R-12 4 megohm 1 watt carbon
R-13 4 megohm 1 watt carbon
R-14 40,000 ohm 3 watt (2 needed)
R-16 7500 ohm 1 watt carbon (2 needed)
R-17 1500 ohm 1 watt carbon (2 needed)
R-18 50,000 ohm 1 watt potentiometer (2 needed)
R-19 1000 ohm 1 watt carbon (2 needed)
R-20 300,000 ohm 1 watt carbon (2 needed)
R-30 2500 ohm 10 watt wirewound
R-31 } 15,000 ohm 25 watt vitreous
R-32 } enamel adjustable
R-33 10,000 ohm 1 watt carbon
R-34 100 ohm 1 watt carbon
R-35 20,000 ohm 2 watt carbon
R-36 50,000 ohm 1 watt carbon
R-37 10,000 ohm 1 watt Morrill or equal (7 needed)
R-38 25,000 ohm 1 watt Morrill or equal
R-39 25,000 ohm 1 watt Morrill or equal
R-40 10,000 ohm 1 watt
L-1 1 turn #14 enamel 1" diameter
L-2 6 turns #14 enamel 1" diameter spaced to make coil 1" long
L-3, L-4 23 turns #30 enamel per coil wound solid on 1/2" bakelite form (outside

- diameter) coils 1/4" long spaced 1/16" apart
L-11 5 turns #14 enam. 3/4" diam. 3/4" long
L-12 3 turns #14 enam. 1" diam. spaced to make coil 1/2" long
L-13 Inca D-22 or equal 20h choke (2 needed or 1 double choke)
C-1 25 mmfd var. isolantite insulation
C-2 .01 mfd 400 volt paper (12 needed)
C-3 50 mmfd midget var. (bakelite ends satisfactory or mica compression type may be used)
C-4 Ditto

- C-11 25 mfd electrolytic cond. 25 w.v.
C-12 .01 mmfd mica 2500 volt
C-13 50 mmfd mica 500 volt
C-14 100 mmfd 500 volt mica
C-15 25 mmfd var. isolantite insulation
C-16 50 mmfd mica 500 volt
C-17 0.1 mmfd paper 400 volt (2 needed)
C-18 }
C-19 } 3-section electrolytic 8 mmfd section 525
C-20 } volt peak
C-22 0.1 mfd paper 400 w.v.
C-23 1 mfd paper 400 w.v. (2 needed)
C-25 .00045 mfd including stray wiring capacity mica cond.
C-26 0.1 mfd paper 400 w.v.
C-28 1 mfd 2000 w.v. Pyranol or equal
C-29 0.5 mmfd 2000 w.v. Pyranol or equal
C-30 .004 mfd 500 volt mica
C-31 50 mmfd midget set at 20 mmfd
SW-1 SPST toggle switch 110 volt
VT-1 6L7 first detector
VT-2 6K7 first i. f. amplifier
VT-3 6K7 second i. f. amplifier
VT-4 6K7 third i. f. amplifier
VT-5 6H6 diode second detector
VT-6 955 acorn television ("audio") amp.
VT-7 6J7 oscillator
VT-8 879 half-wave rectifier hi-voltage
VT-9 905 cathode ray tube 5" screen
VT-10 83-V full wave rectifier
VT-11 885
VT-12 885
VT-13 58
VT-14 58
TR-1 Inca B-7 or equal, sec. 1200 rms.
TR-2 Inca C-66 or equal, sec. 750 rms.

Tele Schedule

The Don Lee television transmitter W6XAO is located at Seventh and Bixel Streets in downtown Los Angeles, and operates on the ultra-high frequency of 45,000 kilocycles (which corresponds to 6 2/3 meters). Image transmissions are made daily except Sunday. The evening schedule starts at 6:30 P.M. and continues to 7:15 P.M. or later. The day-time programs observe the following schedule: Monday, 9-10 A.M.; Tuesday, 10-11 A.M.; Wednesday, 11-12 A.M.; Thursday, 12-1 P.M.; Friday, 1-2 P.M.; Saturday, 2-3 P.M. The Don Lee Station KHJ, on 900 kilocycles, carries the sound portion of the W6XAO programs at specified times. These transmissions are scheduled in advance and are listed in local newspapers.

foreground from receiver to the rear of the cathode-ray tube shield is the output "high" lead which goes to the grid of the cathode-ray tube. The cable leads in the rear which also enter the rear of the cathode-ray tube shield are the cathode-ray voltage supply leads. It is desirable that the cathode-ray tube be mechanically, electro-magnetically and electrostatically shielded. To accomplish this, a piece of 6- or 7-inch diameter stove pipe is suitable for a 5-inch diameter tube. In the receiver constructed, this shield, the two supporting panels and the bottom shelf were cadmium plated. This presents a pleasing appearance, regardless of the lowly origin of the stove pipe.

The mechanical arrangements shown in the photographs do not have to be rigidly followed. Several rules of con-

struction must be observed, however, and these are given herewith. Most important: Power transformers and chokes should not be located closer than one foot from the cathode-ray tube, particularly if near the rear end thereof. If located closer, the stray magnetic field from these devices deflects the electron beam directly by the mechanism of the electro-magnetic deflection, and an irregular vertical margin is found on both sides of the blank field of view of the cathode-ray tube, even if all signal circuit leads are disconnected therefrom. If it is desired that the tube and chassis be close together, the transformers must be located at the front of the tube near the fluorescent screen. All components may be located on one large chassis if these precautions are followed. Another allowable

arrangement consists of locating the receiver and scanning sources on an upper chassis and the two power supplies on a lower, the latter being placed below the former in the cabinet.

Also it is not necessary that metal vacuum tubes be employed. The corresponding glass types are suitable. It is important that an acorn triode be used for VT-6, however. Another acorn triode connected as a diode may be used for VT-5.

In connecting the cathode-ray tube deflection plates, the numbers on the diagram when viewed from the front of the cabinet are: (1) right rear; (2) lower front; (3) upper front; (4) left rear. When this arrangement is observed the picture will appear right side up and printing will read from left to right.

Amateur Section

Edited by F. Hamilton Riddel

16 mm Sound Public Address

... part two of A. P. Hollis' story of non-pro sound situation ...

(Mr. Hollis is the author of "Motion Pictures for Instruction." Part One of this article appeared in the March, 1937, issue of International Photographer.—Ed.)

The trend towards use of 16 mm sound equipment for public address purposes is of particular interest to the owner of "home talkie" equipment, since he already has the amplifier and loud speaker and needs only a microphone to venture into the first stage of public address. Workable mikes may be

purchased at prices from \$10 to \$25, and the very small investment required is justified many times over by greatly extended use given to his equipment.

Most elementary form of P. A. requires the purchase of only a cheap microphone. One that sells for \$15 will illustrate this elementary stage. It is a



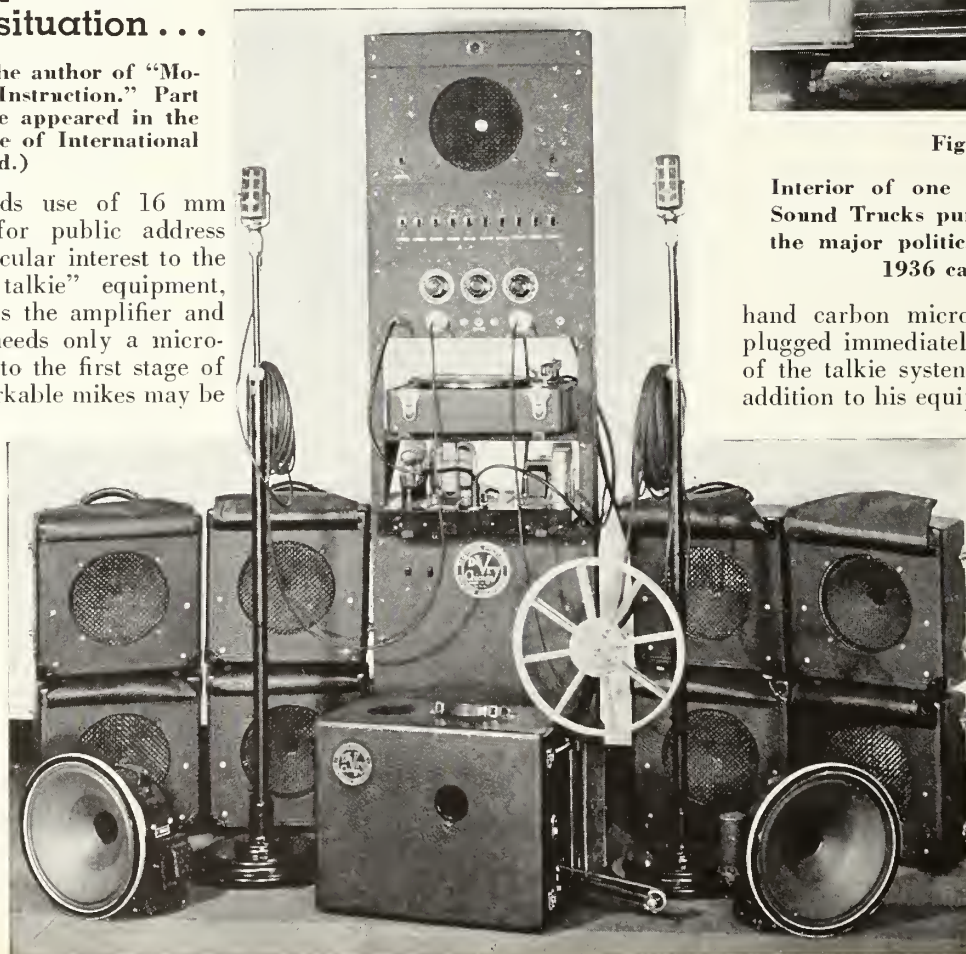
Fig. 11

Interior of one of a fleet of 28 Sound Trucks purchased by one of the major political parties for the 1936 campaign.

hand carbon microphone and can be plugged immediately into the amplifier of the talkie system. With this simple addition to his equipment a teacher, for

Figure 8.

Public Address System for an 8-Room School. Tall panel at back is for the principal's office. It contains switches for communicating with each room. There is also a speaker at the top of the panel. Controls are shown under the row of switches and there are shelves for electric phonograph and amplifier. The amplifier comes with the



16mm sound projector, shown on the floor. Speakers for auditorium and gymnasium use are on the floor near the projector. So are the two velocity microphones. A smaller desk form, ample for inter-room communication, is shown in the smaller Figure 9, on the opposite page. The principal is using it for a broadcast to the schoolrooms.



Figure 7 (Above)—student at Amundsen High, Chicago, adds lecture through mike to silent movie. Fig. 6 (right)—Principal Goodrich, talking into mike, makes silent film into talkie. Loudspeaker just below screen, amplifier on student's desk near projector.



example, can convert all of his silent films into "talkies" by talking his lecture or lesson through the microphone as the silent film is run off. A measure of synchronization (timing) will have to be worked out in advance by practice. Good plan is to measure the time required for running the film—then write out a lecture or broadcast requiring the same time. When the loud speaker is placed behind or near the screen, the lecture sounds as if it were coming directly from the screen.

Educators are only beginning to discover how this exercise freshens up a recitation. Pupils like to recite through the microphone. Voice classes and foreign language classes find the exercise invaluable. "Talkie" units also have an input for the phonograph which is plugged into the amplifier. A wide variety of musical exercises can be broadcast by placing the microphone close to the phonograph.

Principal Goodrich of Amundsen High School in Chicago uses this method with great success, see Figures 6 and 7, and recently gave a remarkable demonstration before the National Conference of Visual Education in Chicago.

Business firms also can use a microphone in the same way to make "talkies" of silent films, and to add emphasis to other talks and announcements in their presentations to salesmen, dealers, etc. *Stage II of Public Address*

To get the most out of their talkie equipment, schools should add a number of small classroom "talk-back" speakers to the equipment; one for each room in the building. This will require also a switch panel for the principal's office which will enable him to talk to any group of rooms simultaneously, and to get reports from the various rooms while sitting at his desk, (See Figure 8.) *Stage III*

Completing the usefulness of the system, it can be augmented for outdoor use.

By proper wiring and more powerful speakers and amplifiers games in the school stadium can be broadcast play by play and outdoor musicals can be provided for large audiences. Some schools go so far as to purchase or rent a sound truck, with generator installed to furnish current, and with loud speakers mounted on the top to broadcast the music or announcements as the parade moves along the city streets.

This can be done with either 16 mm or 35 mm units as illustrated in Figure 11. Type and purpose of film to be used will be the biggest factors in determining whether 16 mm or 35 mm units will be most appropriate.

Production and Distribution of Films

In considering film sources and production, the man on the street will be surprised at the tremendous vogue of the 16 mm. film. Outside of first run theatre releases, it may be said that the supply of 16 mm. sound film is practically unlimited.



Fig. 9

This stage will require more sensitive microphones than Stage I, and the various rooms must be wired for the speaker system.

No attempt is made here to present evidence for the value of talkies in education and business training or in effective advertising. That has been done by numerous and exhaustive experiments in university and commercial laboratories. The reader is referred to a recent booklet giving much of this evidence in condensed form:

"Values of Movies and Talkies in Education;" compiled by A. P. Hollis for Herman A. DeVry, Inc., 1111 Armitage Ave., Chicago, for free distribution.

Light Weight, Easy Handling, Low Cost Transportation — the headings speak for themselves. In addition there are no legal or other restrictions on the transportation, or storage, or showings, of 16 mm. films.

Producers and distributors of 16 mm. sound films are now so numerous that it is impossible to list them here. The reader is referred to the printed catalogs:

1000 and One—The Blue Book of Non-Theatrical Films. Educational Screen, 64 E. Lake St., Chicago.

Motion Pictures of the World and Its Peoples. International Educational Pictures, Inc., 40 Mt. Vernon St., Boston.

Educational Film Catalog—H. W. Wilson Co., New York, N. Y.

Selected Motion Pictures, Motion Picture Bureau, National Council Y.M.C.A., 347 Madison Ave., New York City.

Regular theatrical film exchanges in principal cities:

See your telephone directory under Columbia Pictures Exchange, Universal, Paramount, Fox, Pathe, etc.

Some Hollywood producers maintain 16 mm. departments and many leading industrial firms have sound films for free distribution.

There is also a surprising amount of amateur production. Such universities as Chicago and Harvard and some government departments are making their own sound films—either with sound cameras or, as is more frequently the case, with silent cameras, and having the sound "dubbed" in afterwards at the laboratories.

Test House Details

(See Story on Academy Standard,
Page 25)

Carthay Circle (Type III)

Crossover—375 Cycles.

Mechanism Attenuation—1 db attenuation in the high-frequency unit.

Horn System—Two 284 Lansing units on a single 3x6 (105°) high-frequency horn, and a three-section low-frequency folded horn (of same section design as horn installed in the Chinese and the Warner Brothers Hollywood Theatres), using six 15X Lansing mechanisms.

Screen—Raven Transitone Screen.

Filmarte (Type I)

Crossover—300 Cycles.

Mechanism Attenuation—3 db attenuation in the high-frequency unit.

Horn System—Mirrophonic Speaker System with two 594 high-frequency units on a single-section low-frequency horn using two TO-4181-A mechanisms.

Screen—Walker American White Sound Screen.

Grauman's Chinese (Type III)

Crossover—375 Cycles.

Mechanism Attenuation—2 db attenuation in the high-frequency unit.

Horn System—Two 284 Lansing speaker units on a single 2x6 (105°) high-frequency horn with a two-section low-frequency folded horn (of same section design as horn installed in the Carthay Circle and Warner Brothers Hollywood Theatres), using four 15X Lansing units.

Screen—Walker American White Sound Screen.

Oriental (Type I)

Crossover—300 Cycles.

Mechanism Attenuation—3 db attenuation in the high-frequency unit.

Horn System—Mirrophonic Speaker System with two 594 high-frequency units on a single-section low-frequency horn using two TA-4181-A mechanisms.

Screen—Daytone White Sound Screen.

Pantages Hollywood (Type I)

Crossover—300 Cycles.

Mechanism Attenuation—Although there is no attenuation in the high-frequency units, the power supplied to the low-frequency horn by its amplifiers is 3 db (2 times) more than that supplied to the high-frequency horn.

Horn System—Mirrophonic Speaker System, with two 594 high-frequency units on a single 2x6 (105°) horn with a two-section low-frequency horn using four TA-4181-A mechanisms.

Screen—Walker American White Sound Screen.

Warner Brothers Hollywood (Type IV)

Crossover—300 Cycles.

Mechanism Attenuation—2 db attenuation in the low-frequency unit.

Horn System—RCA two-way horn system actuated by one MI-1466 high-frequency horn with two MI-1428-B mechanisms. The low-frequency folded horn (of same section design as horns installed in the Carthay Circle and Chinese Theatres), has four MI-1432-A mechanisms.

Screen—Walker American White Sound Screen.

Amateur Motion Picture Notes

NEW AMPLIFIER. Bass Camera Company, 179 West Madison Street, Chicago, Illinois, announces early production of a new amplifier for the RCA 16 mm. sound-on-film cameras, for which the company is exclusive world distributor. New amplifier will be a three-stage and will be available in 110-volt A.C. and 90-volt battery, each supplied with crystal microphone. There is considerable demand for this type of apparatus over the world.

AGFA CATALOG. A new and most complete catalog of photographic mate-

rials for professional and amateur use has been issued by the Agfa Ansco Corporation, Binghamton, New York. New listing of this well-known firm's products includes: Cameras and equipment; professional cut films; photographic papers; photographic chemicals; amateur film, 16 mm. and 8 mm.; Agfacolor Ultra plates; and 35 mm. miniature camera films. Profusely illustrated and neatly printed, the new Agfa catalog contains much that is of interest to both amateur and professional.

KODACHROME STORAGE. Movie makers are cautioned in regard to storing their Kodachrome films—do NOT moisten the blotters in your humidors. Kodachrome should be kept in a dry and cool state of storage at all times.

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INTERNATIONAL PHOTOGRAPHER

Vol. 9

Hollywood

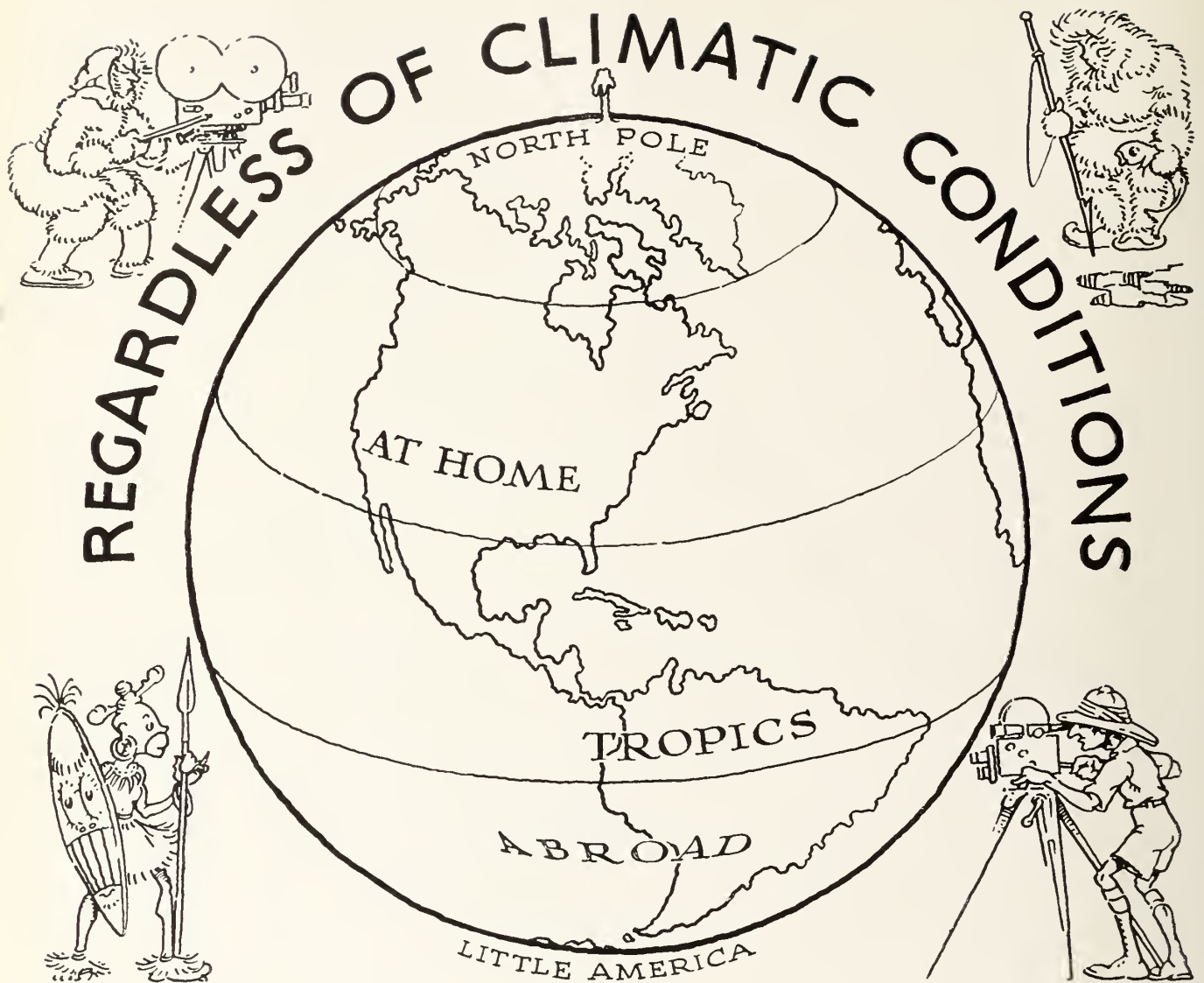
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A Close-up on the April "Best Still of the Month"—See Pages 16-17

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People

JOE E. BROWN got a megaphone from Edward Sedgewich after star substituted when director was ill one day last month, and bossed scenes on the Davin L. Loew picture, "All Is Confusion."

CHARACTER STAR Boris Karloff as he really looks and in 11 varied make-ups conceived and executed by Jack Pierce for weird roles in Universal pictures.



COMPOSITE BY MELLOR

LUBITSCH REHEARSES cast of "Angel" at Paramount on bare sound stage where shooting will take place, to give players right "psychology."



MORGAN



MCALPIN

THE ONE AND ONLY W. C. Fields snapped at Las Encinas Sanitarium. The beloved comedian is well on the road to recovery from his serious illness. He's already busy preparing an original yarn for his next Paramount film.



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Mail Bag

We Appreciate

We want to start right off by thanking the many friends of the IA and the INTERNATIONAL PHOTOGRAPHER who expressed approval and good wishes for the magazine in the new policy and format which marked the April issue. Particularly pleasing and surprising were the letters—and unsolicited checks for one year subscriptions—from important executives and creative talent. We regret that space does not permit a personal acknowledgment to each and every well-wisher.

We Apologize

DEAR MR. ALLER:

I would greatly appreciate your correcting an error that appeared at the end of your otherwise excellent story in your April issue about MGM's experiments with toning of release prints. Your statement that our toning process affects prints so that they must be replaced every 28 days was quite wrong. While I realize that the error was the fault of an over-zealous press-agent at our studio, whose press release you tacked on to your original story, I feel that your readers should have the true facts pointed out since the incorrect story also appeared in other publications. I would even suggest that you yourself check with the Carthay Circle projectionists, who are IATSE members, and you will discover that some of the original prints still are in use for the current "Good Earth." By the time your May issue appears they will have played close to 200 performances.

JOHN NICKOLAUS,
Superintendent of Photography,
MGM Studio.

To Mr. Nickolaus we extend sincere apologies, both for ourselves and for the anonymously over-zealous p. a. Mr. Nickolaus is right. The originals were used up to the end of the premiere run, April 25.—Ed.

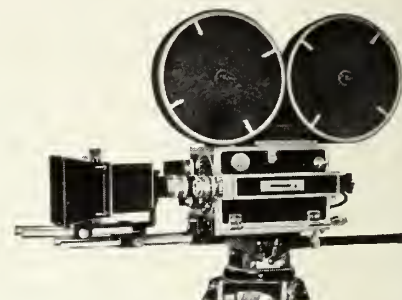
Difference

... the April issue was a great improvement. I particularly liked the new type-faces and layout as it was very handy and easy to read...

... you certainly shook up the staid old INTERNATIONAL PHOTOGRAPHER in the April issue. But, why the outlandish typography and text and head types that glaringly offend the eye?...

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DEVRY SOUND



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KIN-O-LUX, INC.
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INTERNATIONAL PHOTOGRAPHER

No. 9

Hollywood, May, 1937

No. 4

Publisher's Agent, HERBERT ALLER

Assistant, ED GIBBONS

HELEN BOYCE, *Business Manager*EARL THEISEN and CHARLES FELSTEAD, *Associate Editors*LEWIS W. PHYSIOC, FRED WESTERBERG, *Technical Editors*JOHN CORYDON HILL, *Art Editor*D. K. ALLISON, *Contributing Editor*

A Monthly Journal Dedicated to the Advancement of the Motion Picture Industry in All Its Branches: Cinematography, Professional and Amateur; Photography, Lighting, Process, Sets and Decor., Laboratory and Processing, Film Editing, Sound Recording and the Allied Arts and Crafts of Theatre Projection and Operation.

The International Photographer, as the official publication of the International Photographers, Local 659, a part of the International Alliance of Theatrical Stage Employees and Motion Picture Machine Operators of the United States and Canada, not only represents the entire personnel of photographers now engaged in professional production of motion pictures in the United States and Canada, but also serves other technicians in the studios and theatres, who also are members of the International Alliance, as well as executives and creative artists of the industry.

CONTENTS

ON THE COVER: Ronald Colman and Madeleine Carroll in a beautiful still from Selznick International's "Prisoner of Zenda." This picture had already been made into a cut for the cover before Fred Parrish, Local 659, who photographed it, achieved a tie with Romann Frenlich, Local 659, Universal still photographer, for the April "Best Still of the Month." Winners and runners-up, are on Pages 16-17.

People	1
Mailbag	2
Tradewinds	5-6-7-8
New Faces	9
Camera	10-11-12-13-14-15
The Still of the Month	16-17
Sound	18-19-20
Laboratory	21-22-23-24-25
Lighting—Sets	25-26-27
Radio	28-29-30
Projection	30-31
Hollywood Offstage	32

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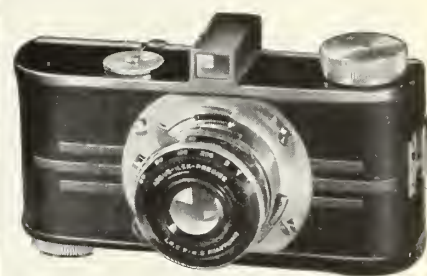
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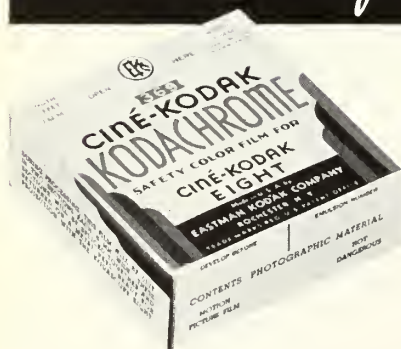
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COLOR—*full color*—makes the picture live. Gray sky snaps into a vivid blue. Tanned faces pulse with ruddiness. Yellow sweater, red tie, and green foliage make a gay scene yet brighter.

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paratively little. Ciné-Kodaks Eight start at \$34.50...Kodascopes Eight even lower. There's a new 16 mm. Ciné-Kodak—the Model E—priced at only \$48.50. And its capable team mate—Kodascope EE—is only \$59.50, complete. Ask your Ciné-Kodak dealer to show you economical Eastman home movie equipment and typical reels of gorgeous Kodachrome. Eastman Kodak Company, Rochester, N.Y.

Right—Your dealer offers this new, 10-cent exposure guide for 8 mm. and 16 mm. cameras. It tells you at a glance what "stop" to use, ends Kodachrome's few outdoor exposure problems.



INTERNATIONAL PHOTOGRAPHER

Vol. 9

No. 4

Tradewinds

Optical Effects • Censors • Publicity • Color Hit



Harrison Effect Shot

New Economical Trick Shot Camera

Harrison Obtains Novel Effects Solely In Camera Under Regular Shooting and Lab Conditions

Producers, directors, writers and cameramen will be interested in the possibilities of the new Harrison Optical Effects Camera, which several weeks ago was finally perfected so that it is now available for general use. It is aimed, according to its sponsors, to help a scene or sequence that needs a novel or spectacular effect to lift it out of the routine without unbalancing the production budget.

Effects obtained are especially valuable for musicals and outdoor scenes, while experiments are under way to determine additional possibilities. Of interest is the fact that the effects are obtained solely in the camera under normal production conditions. The camera uses the studio's regular negative and goes through any company's regular laboratory processing in the usual manner along with the straight photography

in each day's rushes without delay or uncertainty.

Accompanying illustrations all are blowups direct from actual frames of film shot with the Harrison camera. Obviously, all stills must be similarly obtained, since the effects can be secured only in the camera.

Among novel effects already obtained under conditions approximately as good as for the average major production were shots of air-liner flying through rolling balloons of fog, where no fog existed, and of a trans-Pacific liner sinking into the water. People can be shown walking on water and tight-ropeing without any danger. Another thrilling shot done without risk or worry was of a plane coming out of a fog bank, just barely missing a beacon sticking up from another fog cloud and disappear-

ing into still another fleecy mass, while the camera merely ground away on a sunny day on an airport tower as a plane skimmed over it. Again, a transport plane was shown landing in a heavy fog that didn't exist.

Akeley, elevation and dolly shots are possible with the camera. For dance numbers, the chorus can be doubled, put on a mirror or glass of any degree of reflection or on rippling waving water. They can be faded out or dissolved to other costumes while the set and scenery remain the same. Also glass or mirror ceiling or walls can be made to appear as parts of a set. Addition of bi-pack permits color photography for the effects.

Harrison & Harrison have been working on development of the camera the past four years. They now are offering an effects service, which includes a special camera crew, effects director and the complete equipment. Ray Fernstrom, a member of International Photographers, Local 659, IATSE, is in charge of this department.

The camera is the outgrowth of a special attachment with which the Har-



Trick shot of still



Fog effect shot on sunny day



Water reflection effect



... no guns ...



... no frauds ...



... no nudity ...

rierson company has been experimenting for some time. In more elementary form it was used to obtain spectacular special effects for the big production number in Universal's "Top of the Town" musical.

The attachment, in optical principal, was an exact duplication of a coincidence range finder which coincides one right image and one inverted image by merely tilting or moving the reflecting surface. In a range finder this is done to determine the exact distance of the object from the range finder. In the Harrison attachment, doing this same thing brings the bottom image up so that in a dance floor scene as was done in "Top of the Town," the figures of the dancers upright and reflected would coincide and appear on the screen as though they are on top of the mirrored floor. This effect, of course, is identical with that seen through any coincidence inverted finder.

However, in a range finder the included angle is so very low that the overlapping of the two images does not play an important part, but for wide angle camera work on the attachment, it was found desirable to use an adjustable septum similar to the conventional septums used in most all of the two color additive optical systems, wherein it is also necessary to keep two images separated. Instead of being placed in the rear of the lens it is placed in the front, to be more easily adjustable.

Although the attachment for Universal worked satisfactorily for the particular type of shot for which it was designed, it was known that in order to carry out the same idea and enlarge on its possibilities, it was necessary to completely redesign and substantially build an entirely new special effects camera in which not only the optical system itself was materially changed, but also the viewing finder had to be changed because the conventional finder would not under all circumstances coincide the double images. In order to use all focal length lenses it also was necessary to

construct a system whereby various focal lengths could be interchanged as readily as on any standard camera.

The Harrison camera process is not intended to replace any now in use, but to add to the many tricks in the industry's present bag without appreciably increasing production costs. With regard to the work of the special effects unit, Fernstrom and his aides shoot alongside the regular camera crew on a production, without changes in lighting, sets or other usual procedure.



Blowzy drunks and mixed wrestling nearly always get the shears

Notes on Censors

'You Can't Do That' Is Perpetual Pic Worry

People differ, so we have censorship. Varied conditions and human nature in different places, personal likes and dislikes enter into the activities of the many devotees of the ban and the shears. Censorship can be political and factional as well as in the interest of some particular phase of good taste or morals. Hence the subject is unvaryingly and progressively interesting.

Practically every film produced today gets the attention of a censor. Some taboos date back to the early days of the industry. Others are new. And because of the heavy investments in pictures, the subject is a never-ending and delicate problem to the production forces of Hollywood.

Consider kisses. Everybody likes them, except in sections of the Orient, where people believe they are vulgar and immoral in real life or on the screen. In the Far East, clinches are indicated by cooing doves and other poetic symbols. Passionate embraces are conveyed by lightning and thunder. But in Iowa, where people are vigorous typical Americans, kisses must be of the smacking variety. They hold stop watches on them, too.

A big question with most censors is how little of a leg may show. This extends to statues shown in films. In Baltimore, Maryland, a statue of Marlene Dietrich in "Song of Songs" was considered vulgar and it was voted that a drape had to be put over the offending work of art. A court ruling, however, came the objection.

A billboard picture of Nancy Carroll in abbreviated costume caused a theatre owner to be arrested on a charge of indecent exposure. He got out of it by pasting a Mother Hubbard over the Carroll chassis.

It is accepted by all studios that the inside of any female leg must not show above the knee, because the censors take

a nourishing look and then order the scene snipped.

In many places a gun cannot be shown except in the hands of a policeman; also, a person cannot be shown being "bumped off." The details of any criminal act may not be shown.

Drinking always causes trouble. In Kansas the censors throw up a cloud of smoke about women puffing cigarets or men sipping aperitifs. The strictness of the Kansas board causes many of the outlanders there to go to neighboring communities to see films.

Some complaints were received from self-styled censors when a housefly was killed in "Secrets of the French Police." Even uprooting trees may bring criticism. The 50 sheep that were shown dead in "Life of Pasteur" brought a cry of "men, women and children were hungry." Of course the squawkers did not know that the sheep were props stuffed with sawdust. Again, in "Earthworm Tractor" cans of milk were dumped. Assurances had to be given out that the milk was prop milk, consisting of whitewash.

Any implication of the fraudulent or faked in pictures purported to contain actual scenes of odd or unusual places, or incidents, also is cause for aspirin. Since the sensational "Ingagi" case, this point takes on an aspect of ethical trade practice violation as well as having its censorial troubles.

Censors are not a recent thing. They have always been active. Back in 1914, in the July 19 issue of the *Chicago Tribune* some deletions from films were published. A few were:

"'Mabel's Married Life'—all scenes showing girl in pajamas before men other than her husband and all scenes where she is with husband and falls with him to the floor shall be cut out."

"'The Ace of Hearts,' (cut) holdup of man with revolver."

"'The Desert Thieves.' Shorten scene showing gambler and wife driven from town to a flash; shorten struggle in desert between man and wife."

These basic points still are widely adhered to today, as evidenced by the accompanying illustrations of scenes that were snipped in many localities by the censorial shears.



RICHARDSON

"HEY, MAW! Where's our copy of Esquire?" A rarely humorous scene from Paramount's hill-billy musical, "Mountain Music," which would have stood a good chance in the International Photographer's "Still of the Month" competition (see pages 16-17) if it had been submitted before the deadline, which is the 15th of each month.

Canned Publicity

Press Depts. Serve News in Proof Form

With addition of Warners to the list, all major studios except Columbia today shoot a special publicity to thousands of newspapers each week in proof form. The contents are a collated digest of press releases of the week, supplemented by fashion news, short features and gossip columns. Warners started theirs a month ago. Columbia sends out a similar service in mimeograph, but now is considering joining the parade.

The idea was originated at Paramount six years ago, during the regime of Arch Reeve as publicity director. Other studios soon fell in line. The service saves much otherwise expensive mimeographing, cuts mailing costs, and is appreciated by many newspaper motion picture editors for its handy form. Paramount now is adding a new stunt, a "biography in dots." They expect it will take them 80 weeks to run through

their big names and by that time there'll be plenty of new ones.

Editors of the proof press releases at the various lots are: Radio, Nick Carter; Paramount, Ed Churchill; MGM, Frank Pope; 20th-Fox, Nate Dyches; Universal, Bert Holloway; Warners, Arthur Zehlner. Universal also supplies monthly production data service in proof, which is turned out by Evan Hoskins. Other studios mimeograph credits service.

Hands Across Sea

SMPE Talkers Point Up London-Holly Exch.

Closer executive and technical cooperation between London and Hollywood and a consequent continued free exchange of top talent and technical brains must continue despite any apparent obstacles in the way, in the opinion of informed speakers at a recent symposium by the Pacific Coast SMPE Section on the British production situation. Particular stress was laid upon the need for careful certification of the abilities of American technicians going abroad, if antagonism and suspicion in certain quarters is to be allayed.

The session of the Pacific Coast Section of the SMPE was held April 15 at the Hollywood Roosevelt Hotel. It was the first Hollywood group of recognized importance to bring the much-whispered subject of British production into the open. Kenneth C. Morgan, new chairman of the Coast group, pre-



Studio news goes out in proof form with snappy covers

sided, and reports were heard from a half-dozen leading technicians, recently returned from London.

Speakers included Gerald Rackett, who presented statistics showing the rise of British production and its relation to the American film industry; Jack Okey, Hollywood art-director who constructed Alexander Korda's London Films Studio at Denham; A. E. F. MacInerney, responsible for much of Western Electric's sound installation, including that at Denham; and three cameramen, Ray Rennahan, Charles Rosher and Al Gilks.

Consensus of opinion was that British production as a serious enterprise dates back only to 1926, and though still undergoing setbacks and growing pains must be figured an important factor in world film business. Contrary to many trade-paper reports, it was stated that British production, with the inevitable collapse of last year's boom, now is in a more healthy condition than ever.

All speakers paid high tribute to the spirit of British technicians. Cameramen in particular praised willingness and intelligence of their British crews, despite lack of organization, which gives them less favorable working conditions than found in Hollywood.

April's Ace Pic

'Star is Born' Standout Color-Hollywood Film

INTERNATIONAL PHOTOGRAPHER has no picture reviewing department, but if it did we probably would upset the print-shop finding enough stars for Selznick International's Technicolor achievement. "A Star is Born," which is simultaneously the finest color picture and the finest picture with a Hollywood-motion picture industry background to come from a Hollywood studio.

Every so often a picture comes along in which all production elements are merged harmoniously. Such pictures bear the stamp of sincere and enthusiastic teamwork of producer, writers, director, players and technicians. Technicolor was fortunate that its fine new improved quality of color reproduction played a part in such a picture as "A Star is Born." This is particularly interesting in view of the picture's comparatively brief span of shooting days.

"A Star is Born" also has another facet. In addition to its entertainment and box-office qualities, it perfectly exemplifies the benefits of thoughtful preparation before going into production. The picture itself is a better editorial in favor of intelligent fore-planning of picture production than all the reams of advice churned out by Hollywood's critical pontificators.



TOP, PARRISH - BOTTOM, GOLD

"A STAR IS BORN" was the standout picture of the past month in the opinion of most industry workers, critics and the public. Above, the small-town courthouse, where the film's hero and heroine are married. Below, Fredric March and Janet Gaynor in the finest replica of a studio cafeteria ever shown in a motion picture.

SMPE Convention

Getting under way May 24 for four days the spring convention of the SMPE will be held in Hollywood at the Hollywood Roosevelt Hotel. The session will be especially interesting from the technical standpoint because of the many improvements and forward strides being made on all sides in the motion-picture industry, from production to ex-

hibition. The largest array of interesting papers to be presented in several years have been lined up for the convention program.

As has been customary in the past, INTERNATIONAL PHOTOGRAPHER will devote special editorial space to the convention and to new topics and equipment to be discussed, in the forthcoming June issue.

New Faces

20th-FOX TRIO. Right, the Brewster Twins.
Below, Germaine Aussay, French import.



CIRCLE: Oscar Strauss, here from Vienna to do score for Sol Lesser. LEFT: Linda Perry gets make-up treatment from Helen Turpin, while Prof. Dalton S. Raymond, of Louisiana

State, technical advisor on Mervyn LeRoy's "Deep South," looks on. RIGHT: Lena Turner, Hollywood High School girl, discovered by LeRoy, who also gets a big break in the film.



SCHAFER

ABOVE: Luli Desti, Columbia's exotic entry, slated for a build-up. LEFT: The new Tarzan, Glenn Morris, Olympic Decathlon Champion from Kansas, under contract to Sol Lesser.

Camera

Silent Camera • MGM Ideas • Infra Red



New camera with Shirley and Vic.

20th-Fox Silent Camera Proven Success

Passed Stiff Noise Analysis and Production Tests—May Be Made Available to Industry

After several years of experimental construction, concluding with severe tests under actual production conditions, a goal long sought by the industry is now in sight—the silent-blimpless camera. As yet unnamed, the first practical studio-made camera of this type, now is in use at 20th-Fox and so successful has it been that it is reported company executives are planning to make it available to the entire industry.

While no details of any manufacturing plan are yet available, it is understood on good authority that the patents on many features of the camera will be soon made available by 20th Century-Fox to a licensee manufacturer and the silent camera will be marketed generally.

The 20th Century-Fox camera is the only American studio-built blimpless camera of many tested by the Academy's silent camera committee in the past year. Report of this body is expected to be made public this month. Inside information is that the 20th Century-Fox

camera passed the Academy committee's comprehensive noise analysis tests with flying colors.

The camera, which has been used on ten productions to date, including "Seventh Heaven" and "Wee Willie Winkie," represents many departures from conventional principles in motion picture cameras. It operates without any sound-proofing box or blimp and weighs eighty-two pounds. The first American camera to function without such sound-proofing enclosures, it allows the utmost in portability and mobility, particularly at close quarters.

A microscope viewing finder is built into the camera and is brought into position back of the photographing lens by rotating the camera case, which is mounted in a yoke.

The monitor view finder is rigidly secured to the side of the camera and does not pivot or swing. However, the image produced by it truly conforms to the image being photographed on the film, because of a special novel optical



Top: A left rear view of 20th-Fox silent blimpless camera. Middle, comparative view of the new camera, which operates silently without any blimp or noise-muffling covering, alongside a typical studio blimp on the old-type camera—new instrument weighs but 82 pounds when set up to shoot. Bottom, right front view of camera, showing four lens turret mount; camera case shown in shooting position, but for viewing it is rotated as illustrated in production scene at top of this page, bringing a built-in microscopic viewfinder into position behind the lens, and this dropping of the magazine also allows an unobstructed view of the scene.



Grover Laube (in dark coat), head photographic technician at 20th-Fox, and his aides in camera shop where much work was done on new silent blimpless camera.

system which functions automatically. This feature enables the operator to work with the complete assurance of seeing exactly what is being recorded on the film and without having to guess or make allowances for errors that arise from parallax and change of focus.

The camera derives its driving power from a motor mounted on the back of the yoke member and drives direct to the shutter. Either synchronous or AC interlock type motors may be used and driven at shutter speed. This type of drive assures an even and undisturbed rotating motion at the shutter, which is an essential factor in eliminating flicker in straight shooting, when making composites by the projection background process and any other type of process work.

The film moving mechanism—or so-called camera movement—embodies elements of absolute precision and locates each frame of picture with register pins that remain stationary during the exposure. The film is moved from frame to frame at a slower rate of speed than with former cameras and with uniform acceleration, overcoming film damage and loop slap. The dwell time or period when the film is standing still and receiving the exposure is long and allows for exposure with a 200 degree shutter. These features provide a means for producing pictures showing a superb quality of definition and freedom from defects.

Many additional and essential features of convenience are apparent. The camera may be checked or synchronized with projection process by looking through a special aperture and turning a knob at the back. It conveniently loads when on a low or high set-up. Operator has an unobstructed view of set when lining up and may look directly over the camera. All parts are completely sealed from the action of sand, dirt and water. The lens focusing scale is uniform for any focal length lens. The camera turrett mounts four lenses and



Camera set-up and lighting devised by Cameraman Al Gilks for shooting night scenes in the day with Agfa Infra Red Film on Joe E. Brown picture. Story on page 12.

provides a quick change from one to another. The focusing device has a uniform action in regard to moving to and away from the objects to be focused and is accomplished by a self-contained cam actuated lens mount of the non-rotating type.

MGM Camera Aids

The Peeping Mike and Circular Pan Lights

Two novel and valuable ideas for camera crew use were put into operation at MGM last month. One is the

peeping mike, the other a special light setup for circular panning shots.

The special miniature microphone is now in use by six MGM companies and additional equipment is being supplied shortly. In embryo form, as illustrated on this page, it was worked out by William Daniels, to allow the cameraman to address people on the set without pulling away from the camera, and was first used on "Personal Property." The new peeping mikes are compact and efficient and the loudspeaker is built on to the camera housing.

The circular panning light arrangement was worked out by Charles Clark to take care of a large number such



Bill Daniels and peeping mike



Charles Clark and electricians line up circular pan light rig.

BJERRING



SCHAFFER

COLUMBIA'S NEW STILL GALLERY AND MAKE-UP DEPT. The Gower Street lot is getting a general improvement going-

over. Center, the new modern portrait gallery, and left, adjoining dressing rooms. Right, two views of the make-up dept.

shots on "The Thirteenth Chair." It consists of the attachment of nine baby spots to a rigging, above the camera bungalow, which revolves with the movement of the camera.

Such shooting problems frequently arise where actors are grouped around a table and the director wants to work out unusual photographic effects such as Lewis Milestone did so effectively in "The Front Page." "The Thirteenth Chair" presented an ideal sample problem, because the actors in much action are seated in a circle around the room.

Most sets are lighted from the outside in; frequently on a level with the actors, but usually from above. Since the camera had to pan around the entire circle during certain shots, it was impossible to have any floor level lights or any outside lights in back of the players. Clark's revolving cluster of

baby spots, illustrated herewith, solved the problem very satisfactorily.

Westerberg on Page 31

Fred Westerberg fans will find his current clip of the Cinematographer's Book of Tables on page 31 in the projection section. His charts this month are of special interest to owners of portable projection apparatus. Tables on 8 mm. and 16 mm. projection are given.

Night Shots in Day

Agfa Infra Red Invades New Photographic Fields

Production executives have recently become aware of the economical advantages offered by Infra Red negative, particularly for obtaining realistic night

effects in the daytime without the extra expense of actually shooting at night. This has given the general use of such film greater impetus. Producers and cameramen also have discovered that many large areas which were impossible to light for night effects now can be handled in daytime shooting with Infra Red.

While this type of film has already been used in many current and forthcoming productions, it is hoped that the information here presented will be of assistance to those cameramen who have not as yet familiarized themselves with its technical background and characteristics.

Two years ago, after considerable research and investigation, the Agfa Ansco Corporation manufactured and marketed an Infra Red negative film type No. 158, which rated technical award from the Academy of Motion Picture Arts and



MCALPIN

RABY BLIMP AND MITCHELLS. Paramount's camera array has been supplemented by 10 new N. C. Silent Mitchell cameras, which James R. Wilkinson, camera department head, has had equipped with new type blimps, turned out by Victor Raby's Studio Equipment Company. The new Raby blimp, marked by neat, trim lines, is lighter than the general standard, weighing 80 pounds, and permits much greater ease of

operation. Instead of the usual turn-buckles, it is opened or closed by a single control knob. A valuable feature for re-loading is that it is not necessary to remove the finder. It swings on its axis to allow side door opening for changes of film. This speeds up production considerably. The new blimp's front glass opening also is much smaller than generally used, being 5-inch by 7-inch.

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Sciences and served as a forerunner to the film now under discussion. Farcot Edouart, head of the transparency department at Paramount, was the first executive to test and utilize the possibilities of the first Infra Red film type manufactured by Agfa Ansco. He found it peculiarly fitted to the requirements of his department both as to speed and gradation and that background plates revealed no appreciable grain and carried through to the finished product a normal and healthy contrast. The success of this type for aerial background and night running shots was a noteworthy step forward in adding to the realism obtained by trick work in general.

Further testing, with straight production work in mind however, found the type slightly steep in gradation when photographing characters in the usual panchromatic makeup. Flesh tints and especially lips were prone to show an unnatural white on the screen, and in general the characteristics which rendered it valuable for process projection work operated against its utility for production use.

With these considerations in mind and with a definite conception of the requirements necessary for a more general application, Agfa Ansco brought out, in December of 1936, an additional Infra Red Type B negative designed to permit photography in the daytime of the majority of exterior scenes ordinarily photographed at night.

Emulsion characteristics of Type B Infra Red negative are similar to that of the original type No. 158, with the exception of increased shadow speed and an alteration in gradation which renders it now comparable in contrast to panchromatic materials when developed together. Filters ranging from the Wrattan No. 21 to the 29 F may be used with excellent results but practical experience has shown that the most useful all around filter is the last named. The filter factor for Infra Red negative in combination with these filter types is from four to six or, for instance, when photographing an F11. panchromatic light without filter, a normal exposure for night effects will be secured on Infra Red at an opening of F 5.6 with the blue absorbing Wrattan 29 F filter. Use of deeper red filters is not recommended as they unnecessarily prolong the exposure, due to their lower transmission, without rendering any improvement in picture quality.

Principles of lighting technique, applicable to day photography, have without change produced excellent night effects on this film when the appropriate filter is used. Modeling in closeups may be done with the same response observed in panchromatic material. Exhaustive tests, conducted to observe the effect of panchromatic makeup, have been made and results reveal that the

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only alteration necessary is a slightly darker lip rouge. Samples of this lip rouge especially prepared for use with this film are available at Westmore's.

Practicals, such as street lamps, automobile headlights, etc. are rendered far more natural than has heretofore been possible but window lighting must be done, of course, with booster lights, aided by the usual diffusion cloth. Experiments are now under way to develop a hand torch, which, when needed will deliver a maximum efficiency in the region of 7,500 A. U. wherein lies the film's sensitivity peak. It is hoped also that a flare will be designed that will produce natural flicker and eliminate the use of present mechanical apparatus.

Pictorial scenes in which there is considerable green foliage are recorded with particular charm due to the Infra Red radiation from chlorophyll, which is the green coloring matter of all plants and leaves. The effect produced by this substance is very similar when viewed on the screen to actual moonlight scenes.

The use of this film type involves no great laboratory problem as processing may be carried out in the usual manner without special treatment or alteration in developing times. Prolonged development, if necessary, does not appreciably increase fog and gradation advances in steepness by the same ratio as obtained with panchromatic material. Although the average green safe light filter in use in most laboratories transmits Infra Red rays to some extent the ordinary precautions observed for panchromatic negatives have been found to provide sufficient protection.

—WILSON LEAHY

Ray's 16 mm Pic

A 16mm film of the Paramount location company trip to Ketchum, Idaho, for "I Met Him in Paris," was captured by Harry Ray, make-up man with the troupe. He titles it "55 Days in a Frigidaire."

A Handy Negative File

Willoughby's Inc., announces a new film file, known as the Spiral Negative Wallet. It costs but thirty-five cents. The Wallet consists of a spiral-bound book of ruled pages and transparent envelopes. Each envelope will accommodate film strips up to the number 120 roll film size. Negatives can be easily and clearly seen without necessity of removing them from their envelope. Because of the spiral binding, each data sheet and envelope lays flat, a convenience you will appreciate, if you have ever owned a file book in book form in which the binding makes it all but impossible to examine negatives without doing gymnastics.

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**The JUNE International Photographer Will Feature
A Special SMPE Convention Section. Don't Miss It.**

Parrish and Freulich Tie in First

FOUR HONORABLE MENTIONS GO TO ...



International Photo Month" competition for April between Parrish and Freulich, on "Prisoner of War," Universal, on "The Prisoner of War," made by a committee picked at random. They were recognized still as winners that they would be awarded.

Standout stills were (1) Gallery Seatings; (2) Action Scenes; (3) Production Spectaculars; and (4) these classifications. In April, the tie winner was Action Classification.

Honorary mention to Jones, Universal, 1st Kornman, 20th-Fox, and also: Cliff Maupin, 2nd H. Griffith and crew, with, MGM, "Broadway."

Parrish's still is a still camera of a 16 which the Teague Photo is an interesting aspect from a sound stage camera.

DATA ON THE

PARRISH
Selznick International
Anseo 8 x 10
Eastman Panoro Press
Studio Interior
Cooke F-6.6
F 16
1/10 Second



PORTRAITS: Deanna Durbin, Universal's young singing star, photographed by Ray Jones.



GALLERY: June Lang, 20th-Fox contract player, photographed by Gene Kornman.



SPECTACULAR

Still of the Month" Competition

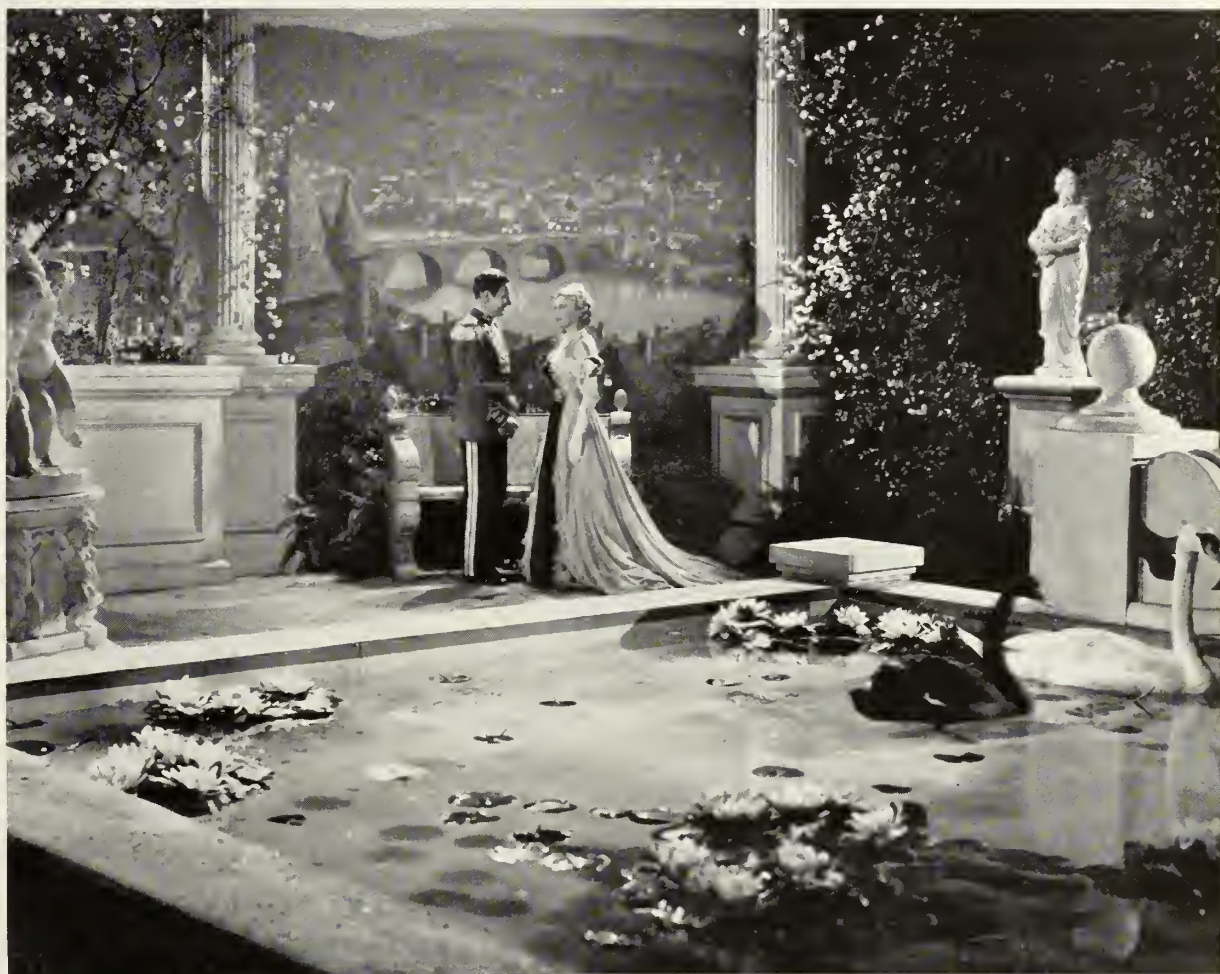
rst "Still of the
tie for top place
Selznick Interna-
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Selections were
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formals; (5) Pro-
From finalists in
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om the Production

: Portraits: Ray
; Gallery: Gene
roduction Inform-
a Young; Edward
Sets: Ed Cronen-
mber.

t is a snap with a
ground scene, in
Freulich's entry
composed scene

..JONES, KORNMAN, MAUPIN, CRONENWETH



G PICTURES

FREULICH
Universal
Anso 8 x 10
Eastman Portrait Pan
Studio Interior
Zeiss F-7.7
F 16
½ Second



big production number from MGM's latest production in the
"Melody" series, photographed by Ed Cronenweth.



PRODUCTION INFORMALS: Loretta Young, Director Ed-
ward H. Griffith and crew; Cliff Maupin.



Film Tested...

Laboratory and
Sound Recording
Equipment

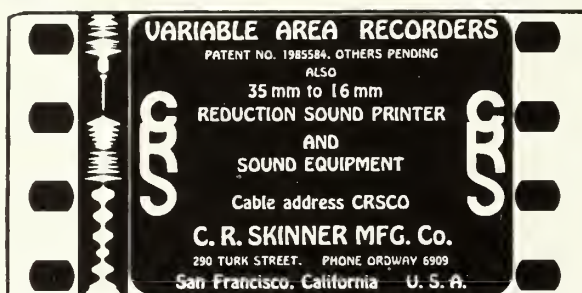
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Sound

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Streamlining and ultra-convenience in operation are the order of the day in portable sound recording. Following on the heels of Warner Brothers' recently acquired fleet of modernistic motorized sound units using RCA equipment, General Service Studios now are putting a fleet of ten steel trailers into service with the latest in ERPI sound.

The Warners' trucks are mounted on Ford chassis. New type equipment at General Service consists of an ERPI "Q" channel used in a steel trailer fourteen feet long, six feet wide and six feet high. Ample dimensions of the trailer permit inclusion of a dark room for reloading in the field, and plenty of space for accessory equipment and spare parts.

Recording equipment itself is mounted in a wall arrangement at the front end of the trailer, so located that all parts requiring attention are within easy reach of the seated recorder operator. Equipment is entirely AC operated, supply for both motors and amplifiers being 220 volts three phase 60 cycle, transformed to 120 volts single phase, for operation of the power units and lighting equipment.

Design has been carried out in a modern motif to harmonize with the appearance of the "Q" equipment itself. Interior lighting consists of lumline lamps mounted behind flush panels in grooves near the ceiling, so that an anti-glare soft illumination is achieved.

Other features include cable reels, contained inside the trailer, accessible through trap doors at the rear, film magazine bin compartments for camera motors, etc. The mixer cabinet, also done in a modern style, weighs only 55 pounds and can easily be transported by one man. Motive power is supplied by the Chevrolet business coupe. The steel trailers were built by the Hollywood Steel Trailer Company.



NEW ERPI SOUND TRAILERS. Left, looking aft, showing dark-room for reloading. Center, trailer on the road. Right, looking forward into the modernistic design interior. This is one of a new fleet of ten trailers at the General Service studio.

New Canady Recording Galvanometer

Wide Range Instrument Adaptable to Record Any Type Sound Track—Reduction Printer Due

Following on the heels of their success with a complete line of new sound-on-film recorders, re-recorders, amplifiers and recording lamps, which were put on the market ten months ago, and now are in use throughout the world, the Canady Sound Appliance Co. this month announces a new recording galvanometer and currently is in the throes of preparation for the marketing of a new 35 mm. to 16 mm. optical reduction sound printer aimed to sell for less than \$2500. These will be followed soon by a new series of high quality theatre reproduction equipment, which now is in the process of development along most advanced lines.

The new galvanometer covers a wide range between 30 and 10,000 cycles, is rugged and requires very little attention. The outstanding feature is that it can be changed at will to record any type sound track. While designed particularly for the Canady DeLuxe Recorder, it is available for use with other recorders.

In addition to its regular commercial program, the Cleveland, Ohio, company has been especially active in constructing machinery and equipment to special order. During the past year, the Canady organization designed and built a large amount of special recording and reproducing equipment for the research laboratory of a first-rank American university, which is delving deeply into research work in sound phenomena.

The demands exacted for this equipment greatly exceeded those for any in commercial use today, particularly in the way of constant speed. Before the purchaser accepted the equipment, the finished recorder was connected to a power line supplying a 5-kw. motor-

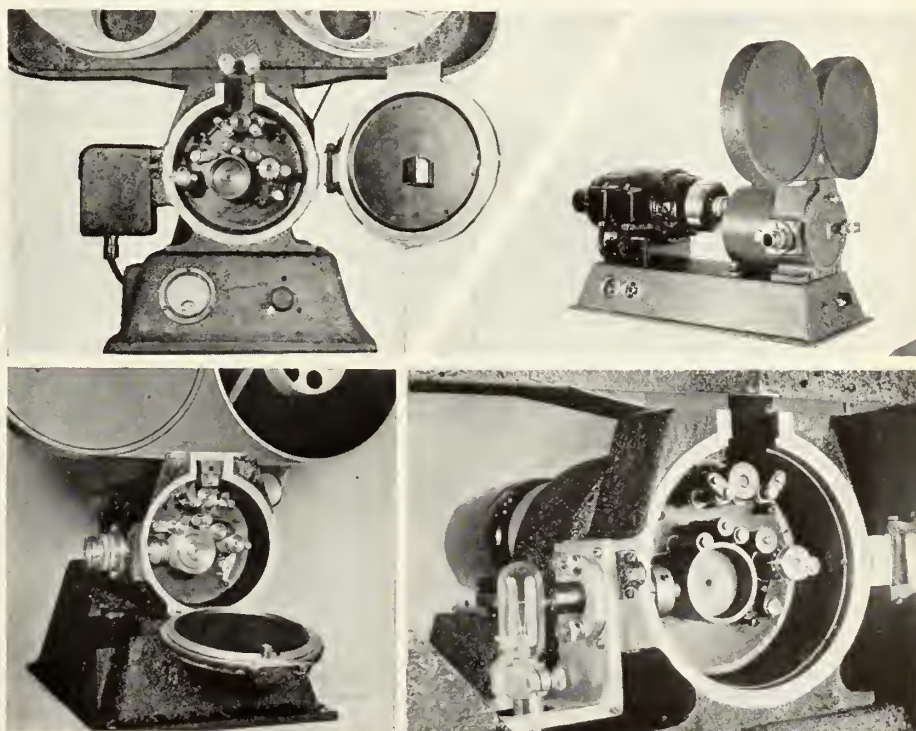
generator set and after the recorder was in motion, the set was alternately thrown on and off the line. The machine had to stand up under this treatment without the disturbance having the least effect on the linear film speed of the recorder.

This unusually reliable performance in constant speed is a feature of the recorders and re-recorders marketed commercially by the Canady organization. Design of the Canady sound-on-film recorder, first built in 1929, is based on fundamentally sound engineering principles and since the initial model the company has retained the 2-inch recording drum with its associated

principles, while other manufacturers have exploited various sized drums and sprockets, straight and curved film gates, etc.

Producing Firm

A new corporation with a program of producing radio shows and transcriptions, slide film, industrial pictures in black-and-white and color and two features during the next year, has been formed under the name of Fitra Productions, Inc., by Dr. W. H. Voeller, I. O. Witte and Edward Pavaroff. Dr. Voeller has been in motion pictures and radio for many years and was associated with Conquest Alliance Company, international radio sales organization, the past four years as executive vice-president, while Witte is a veteran radio producer. Pavaroff will be in charge of all music angles for the company. Headquarters are at 8609 Sunset Boulevard.

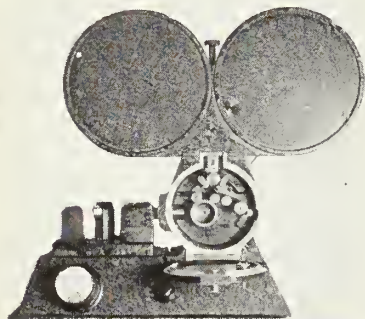


Picture flashes of Canady models. Top left, the re-recorder. Top right, constant-speed recorder with glow lamp. Bottom left, a close-up of the glow lamp model recorder. Bottom right, close-up of the re-recorder.

Announcing

A New Sound on Film Recording

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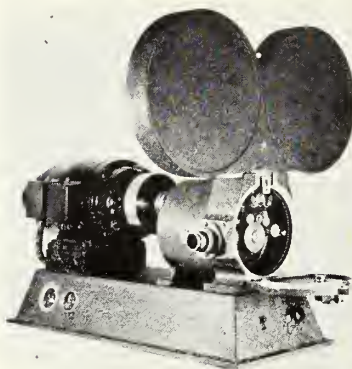


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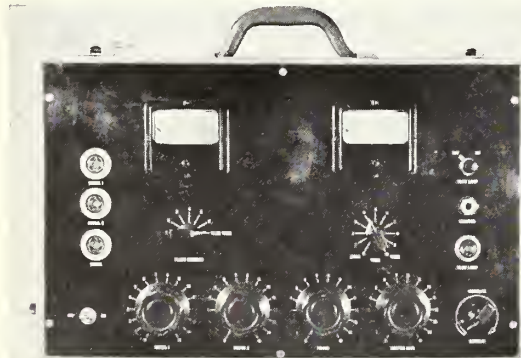
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NEW ERPI PREXY, Whitford Drake, elected at the April 13 board meeting, was formerly executive vice-president. Daniel C. Collins, comptroller, succeeds Drake, and E. S. Gregg, Collins' assistant, becomes comptroller. The new president appointed P. L. Palmerton to the post of general foreign manager.

New Duplex Splicer

Innumerable requests for a splicing machine that would be not only fast and durable, but safer to operate, has resulted in the production by the Duplex Company of a DeLuxe Splicing Machine, entirely hand operated, eliminating backache and other troubles that sometimes accompanied the foot operated machine. The manufacturer states that a girl may operate this machine, even for long hours, and feel no ill effects, nor is there danger of injuring the hands. It is equipped with an everlasting scraper and is flexible enough that it is readily adaptable to color film. Like all Duplex machinery, the splicer carries the usual one-year guarantee.

畫意能達萬言

*Translated
Means . . .*

"One picture
is worth ten
thousand words"
(Old Chinese Proverb)

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Laboratory

Scientific Lab Control • Kodachrome Processing

Application of pH

Part 2 of Series on Accurate Lab Control

(Unusual interest has been evinced from amazingly far-flung sources regarding the opening article of this series on pH control methods in film processing by our Contributing Editor, D. K. Allison, vice-president of the Chemical & Research Corp. Leading logically from the initial explanation of what pH is and how it functions, Part II explains clearly and concisely, yet with full technical facts, the methods and instruments of pH measuring.—Ed.)

Methods for measuring the pH of a solution may be divided into two main classifications, the colorimetric method and the electrometric method. The colorimetric method is based upon the property of certain dyes to assume a color which is determined by the pH of the solution. One of the earliest known substances to possess this property was litmus; this substance, a natural material extracted from lichens, is

dustrial control. The dyes most commonly used in this method of pH measurement today are the sulphonphthalein colors, of which the more important members are listed below with their corresponding pH ranges:

Indicator	pH Range
Acid Cresol Red	0.2—1.8
Acid m-Cresol Purple	1.2—2.8
Bromphenol Blue	3.0—4.6
Bromcresol Green	3.8—5.4
Chlorphenol Red	5.2—6.8
Bromthymol Blue	6.0—7.6
Phenol Red	6.8—8.4
Cresol Red	7.2—8.8
Metacresol Purple	7.6—9.2
Thymol Blue	8.0—9.6

Other widely used indicators not included in the above series are Methyl Red, pH 4.2—6.3; Methyl Orange, pH 3.1—4.4; and Phenolphthalein, pH 8.3—10.0.

A typical example of the sulphonphthalein colors is Bromthymol Blue, for which the chemical name is dibromothymolsulphonphthalein. It is prepared synthetically from saccharine and thymol by a series of chemical operations. This dye is a bright yellow at pH 5.6, and passes through an infinite gradation of shades of green to a deep blue at pH 8.4. This color transition is shown graphically in Fig. 1. The eye is unable to distinguish the color changes at the extremities of the range, and the usual range is from pH 6.0 to 7.6. Since each indicator visually covers only a narrow pH range, the pH range of a solution is first approximated by the use of a wide range indicator mixture, of which the following is illustrative:

Phenolphthalein	100 milligrams
Methyl Red	200 "
Dimethylamincazobenzene	300 "
Bromthymol Blue	400 "
Thymol Blue	500 "
Ethyl Alcohol	500 c.c.

The above indicator mixture, added to the solution in the proportion of one drop per cc. of solution, assumes the following colors:

Color	Red	Orange	Yellow	Green	Blue
pH	2.0	4.0	6.0	8.0	10.0

From the approximate pH determined by this method, the operator chooses the correct indicator dye. A measured

quantity of this indicator dye is added to the sample and the resultant color compared with the colors obtained by adding the dye to solutions having known pH values. (These solutions are known as "buffer" standards, and are obtained by compounding certain chemicals in predetermined proportions.) The pH color standard which matches color of the sample indicates pH value of the sample. For solutions which are not too deeply colored, the arrangement shown in Fig. 2 compensates for solution color. Looking through slots AA, BB, CC, the operator is looking through exactly the same materials—sample, indicator, distilled water—in each case. When the proper color standards are in place, the color of the sample will match one of the color standards or lie between the colors of two consecutive standards.

Despite its simplicity, the visual colorimetric method has several disadvantages. Variations in color vision be-

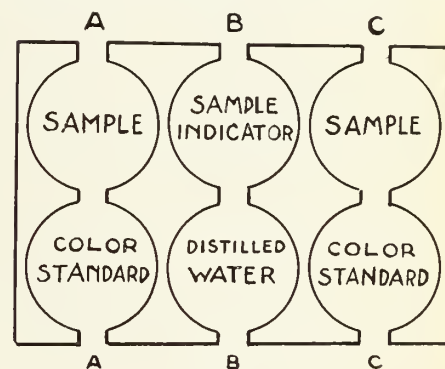


Figure 2

tween operators render it difficult for different operators to check each other's results. Also, visual range of color change for an indicator is limited, particularly for film processing where a large number of indicators is necessary to cover the pH changes. Finally, the human eye lacks ability to discern color changes in turbid or highly colored solutions, and the maximum visual precision is usually 0.2 pH unit. The reader will recall from the previous article that this corresponds to nearly two-fold change in active acid concentration.

All the foregoing disadvantages of the visual colorimetric method have been overcome by the instrument shown diagrammatically in Fig. 3 whereby automatic control of the pH of photographic processing solutions such as developer and hypo is made possible for the first time. In this device, ultra-sensitive photoelectric cells replace human operators. Referring to the figure, the solution enters through line 200, flows through cell 202, a small proportion of indicator dye added in line 210, and the solution then flows through cell 211, from whence it is returned to the process. During its passage through cells 202 and 211, the solution is scanned

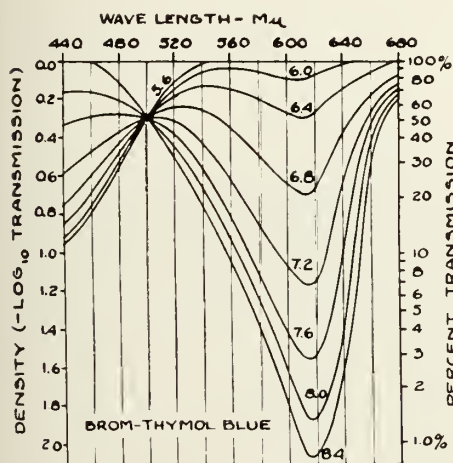


Figure 1

still widely used today to indicate roughly whether a solution is acid or alkaline. For precise work, however, it has long since been replaced by synthetic dyes.

Comparative simplicity and lower cost of the colorimetric method has enabled it to hold a strong place in in-

● a beautiful
negative and
fine prints reveal
... picture value.

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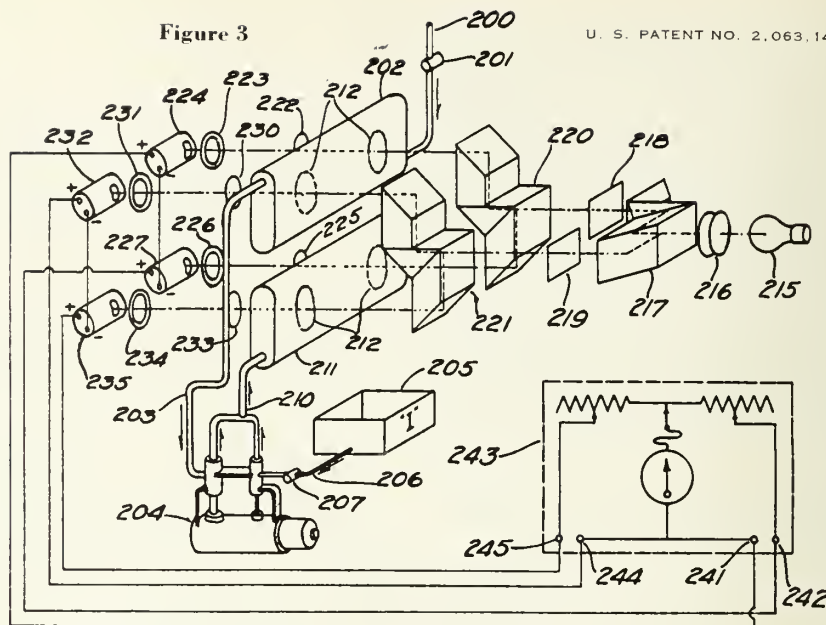
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Figure 3

U. S. PATENT NO. 2,063,140



by photoelectric cells 224, 227, 232, and 235 (here shown separately, although in practice they are elements of one poly-cell) by means of a light beam from lamp 215, divided by prism 217, and rendered differentially monochromatic by filters 218 and 219. The response of the photocells is balanced on the automatic potentiometer 243, which records the pH values of the process solution, and if desired can automatically operate valves to maintain constant pH. A careful study of the figure will show that the device automatically compensates for all variations in solution color or turbidity, and has four times the sensitivity of a double-cell system. In actual practice, the above device is a small, compact unit mounted directly on the process tank, and the pH recorder element proper, shown in Fig. 6, may be mounted several hundred feet away in the office of the laboratory superintendent.

The electrometric method for pH measurement is based upon the property of certain electrode materials to de-

velop an electromotive force (EMF) or voltage when placed in a solution, which is a direct or duplicable function of the pH of the solution. The measuring electrodes commonly used today in industrial work are the hydrogen electrode, the quinhydrone electrode, the antimony electrode, and the glass electrode. The first three named are metal surfaces which generate their EMF at the metal-liquid interface. The glass electrode is a very thin glass membrane which acts in a manner analogous to the metal electrodes, but because of its extremely high resistance requires the use of an ultra-sensitive galvanometer. For precision glass electrode measurements the suspension D'Arsonval galvanometer is recommended, although for rough work a vacuum-tube galvanometer may be used.

In determining pH, the EMF of the measuring electrode is referred to a reference electrode. The reference electrode most generally used is the "saturated potassium chloride-mercurous chloride half cell," commonly known as the



Above: Figure 4; top right, Figure 6;
bottom right, Figure 5.

saturated calomel electrode. Such an electrode derives its voltage from a mixture of specially prepared mercury and mercurous chloride in contact with saturated potassium chloride solution; contact with the solution whose pH is being measured is made through the potassium chloride solution. Such an electrode develops a constant potential of about 0.25 volt at ordinary temperatures.

When a measuring electrode and a reference electrode are immersed in a solution, an EMF is generated which is characteristic of the electrode used. The equation for the electrode equilibrium may be expressed:

$$EMF = E_{cal} + E_o - RT \ln \frac{1}{nF H^+} \quad (1.)$$

where E_{cal} is the reference electrode, E_o a constant for the measuring electrode, and R , T , n , and F are Nernst constants. By the devious methods of physical chemistry and mathematics, we can reduce the above to

$$EMF = a \text{ constant} + 0.059 \text{ pH} \quad (2.)$$

that is, for each change of one pH unit, the EMF of the electrodes changes 0.059 volts, or 59 millivolts.

It might therefore seem a simple matter to place a voltmeter across the electrodes, measure the EMF, and thereby arrive at the pH of the solution. However, if we do so find that a voltmeter draws current from the electrodes, and in so doing we polarize the electrodes, depart from the conditions of equations (1) and (2), and consequently we do not measure pH. Therefore, we use the potentiometric method, whereby EMF of the electrodes is exactly opposed by an EMF whose magnitude is shown. By this method, no appreciable current is drawn from the electrodes, the conditions of the equations are met, and the resultant values are true indications of the pH of the solution.

The earlier potentiometers were strictly research tools, poorly adapted to needs of production work. The average such instrument was a maze of wires, control knobs, dials, adjustments, each of which had to be manipulated before, during, and after each measurement. Single pH determinations by the older methods often required hours, and it is little wonder that the motion picture industry with developing machines having film speeds up to 100 feet per minute was hesitant in adopting pH control. Other great industries, such as the sugar industry and the paper industry, had similar high speed production pH control problems, and the need for simple, rapid, accurate pH meters became imperative.

Within the last two years, such progress has been made in electrometric pH measurement that it is now possible to make measurements with an accuracy of 0.01 pH in 15 seconds. The measuring unit of the pH meter shown in

Fig. 4 weighs less than three pounds, is small enough to slip in your coat pocket, operates from a single flashlight cell for a year, and yet will accurately measure all pH values from pH 1.0 to 12.0. It may be used with the glass electrode if desired. The larger unit shown in Fig. 5 is planned for



"quack"



"putt, putt"



"ouch"



MCALPIN

cork pop and echo

RUBBER PUSS. What could better brighten an involved technical paper on pH than this collection of comic poses by Rufe Davis, who'll be seen on the screen in Paramount's "Mountain Music." Rufe gets laughs with sounds and smirks.

laboratory control measurements. It is frequently used with the glass electrode for pH measurements of developer, hypo, and color solutions, and has the added feature of conductivity measurements whereby the purity of the distilled water, hydroquinone, and other chemical supplies may be checked easily and accurately. All of the major color laboratories and many of the black-and-white laboratories are using these instruments and other models to advantage today.

Fig. 6 shows the highest development in modern pH control; the automatic Strip-Chart pH Recorder. This masterpiece of instrument craftsmanship automatically records and if desired controls the pH value of the photographic process solutions. For operation of wash-water, alum treatment, and water softening installations it operates in conjunction with the antimony electrode. For use in developer, hypo, toning, and color processing solutions, it operates in conjunction with the Photoelectric pH Control shown in Fig. 3. Such instruments measure and record any pH value from pH 0 to pH 14; automatically correct the pH record for temperature variations in the solutions; and will record as many as six different solutions on one instrument.

—D. K. ALLISON.

Kodachrome

First of a Series On Magic of Color Stills

Probably as hot a topic as any technical angle under discussion in both the professional and amateur circles today is Kodachrome, the magical new color system, whereby color is obtained on one single film with ordinary cameras.

Kodachrome, in its present state of development, is intended primarily for the amateur, although it possesses immense possibilities in the future for professional work.

While at the present time, no one can predict just when the machinery and techniques will be developed so that we will be able to process Kodachrome kodak roll film, film packs, cut film and even paper, and finally full 35 mm. for feature productions, intensive research is continuously under way and the future is literally and figuratively "rosy."

However, this series of articles will be confined to a basic presentation of what Kodachrome is and in this current paper particularly the system of processing which makes it possible.

Professional color in features is well typified by the highly successful Technicolor process, latest example of which Selznick-International's "Star Is Born," is a gorgeous piece of showmanship and color production. The beautiful color

KODACHROME PROCESSING

*Step by Step in Color Magic—Figures 1 and 2
Are Explained in Accompanying Story*

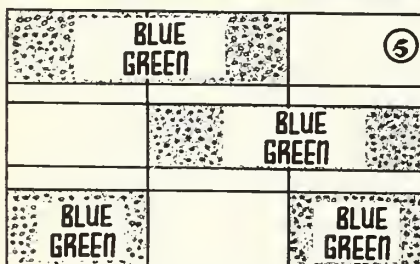
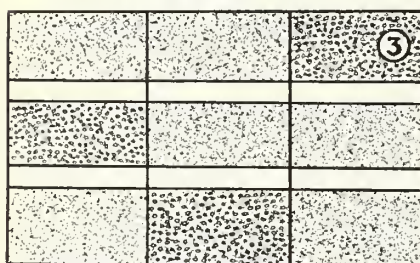
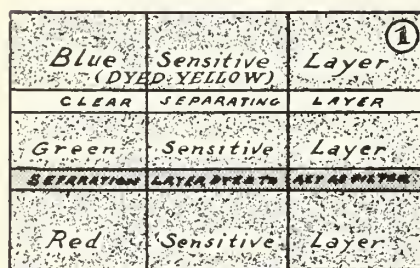


FIGURE NINE. Film is again developed in a coupler developer which changes the silver halide to metallic silver and this time deposits a yellow dye.

FIGURE TEN. The silver in all three layers is next changed to silver halide by a bleach which does not affect the dye.

FIGURE ELEVEN. Finally, all silver is removed by fixation. This fixing bath is so composed that it also will not affect the dye.

Now comes the question, "How do the yellow, magenta and blue-green dye-images in the film produce upon the screen the green, red, and blue images which were originally photographed?" The answer to this question is found in the final diagram:

FIGURE TWELVE. Here we see white light first passing through blue-green dye-image which absorbs red light, then finally passing through yellow dye-image which absorbs blue light, leaving only green light to travel on through to the screen. Next we have white light passing through magenta dye-image, which absorbs the green light, then passing on through yellow dye-image which absorbs blue light, leaving only red light to be transmitted on through to the screen. Again in the next space we find white light passing through blue-green dye-image, which absorbs red light; and then through magenta image, which absorbs green light; leaving only blue light to travel on through to screen.

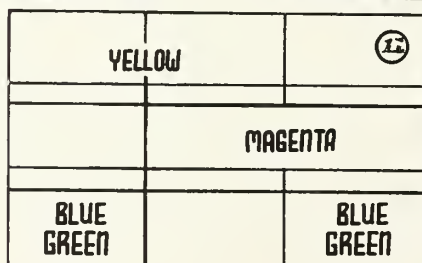
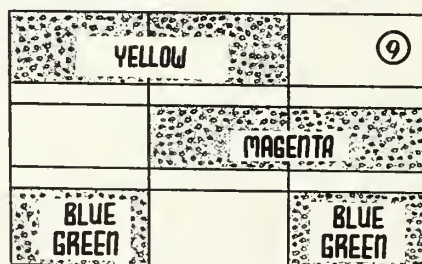
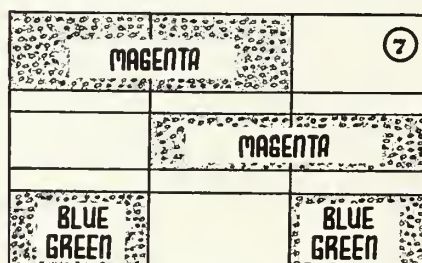
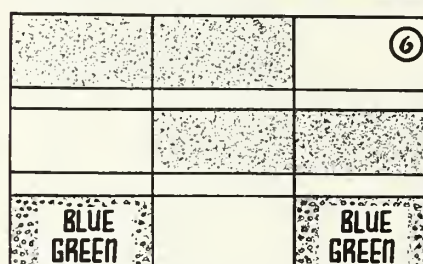
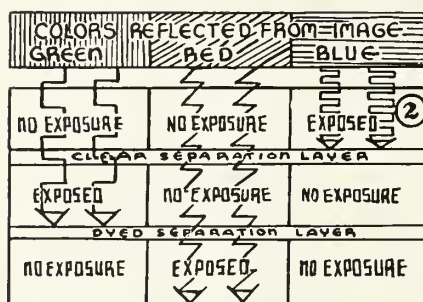


FIGURE THREE. Shows three images after first development—metallic silver in exposed areas, silver bromide remaining in unexposed areas.

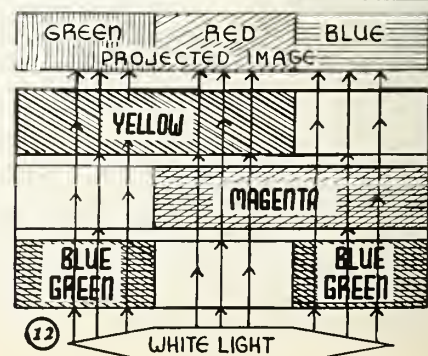
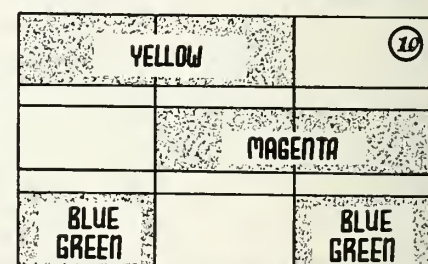
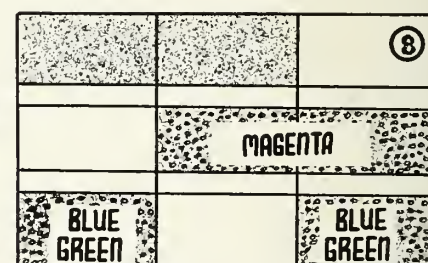
FIGURE FOUR. Next step, by a reversal process, silver image is removed with a bleach which does not affect the residual silver bromide.

FIGURE FIVE. The whole film is now exposed to light and developed in a coupler developer, which transforms silver bromide in all three layers into metallic silver and blue-green dye. Film is then fixed, washed and dried.

FIGURE SIX. Film is next acted upon by special bleach which destroys the dye and at the same time transforms the silver back into silver halide. This bleach is so controlled that it attacks only top two layers of emulsion and does not penetrate through to bottom layer.

FIGURE SEVEN. Film is then washed and passed into another coupler developer which transforms silver halide in top two layers into metallic silver and magenta dye.

FIGURE EIGHT. After being dried, film is again treated as before by a bleach so composed and controlled this time as to function only in the top layer of emulsion, being stopped in the first separation layer and not penetrating through to the magenta image in the second layer of emulsion. The dye is bleached out and the silver changed as before to silver halide.



seen in that and other Technicolor pictures is obtained by inhibition printing onto positive film which contains a faint silver image. This requires three separate negatives and since these negatives are exposed through one lens, it requires a very intricate and complex camera, special production attention and special and remarkable processing.

This, of course, is out of the question for the amateur, hence, the arrival of Kodachrome, which, producing thrilling results as if by magic, has provoked unusual interest. By simply placing a roll of film, seemingly no different from any other used before, in a 8 or 16 mm. movie camera or 35 mm. still camera, and properly exposing it, a picture in full natural color results.

What appears to be almost magical is in reality the result of a number of intricate and delicate processes. Essentially, Kodachrome is possible because the Eastman Kodak Company has been able to produce a film, which is coated with five very thin layers of gelatin upon a single support, plus the use of dye-coupling developers. (Fischer 1912.) These five layers are coated upon a film base as follows (See Figure One): (1) A red-sensitive emulsion, which records the red image; (2) a separation layer of gelatin which is dyed to act as a filter; (3) above this, a layer of green-sensitive emulsion which records the green image; (4) another separating layer which is clear; and (5) the blue-sensitive layer of emulsion which is dyed yellow and records only the blue image.

Figure Two shows how green, red, and blue light affect Kodachrome film. Green light does not affect the blue-sensitive layer and is transmitted by the yellow dye on through to the middle or green-sensitive layer, where it is recorded. Its progress is stopped in the next separation layer, which is dyed to act as a filter, hence the green light does not continue on to expose the bottom layer. Even though this bottom layer is strongly red-sensitive, it has a slight sensitivity to green. Next is the red light, which also does not affect the blue-sensitive emulsion and is transmitted through to the green-sensitive emulsion, which it also does not affect, and finally reaches the bottom layer, where it is recorded. Finally, there is the light from the blue image, which is recorded in the blue-sensitive layer and is stopped by the yellow dye from going on and affecting either of the other two emulsions below.

After this five-layer film has been exposed, the color results are obtained through a series of complicated processing operations, which are illustrated in the chart series on Page 24. It can easily be seen that much intricate and delicate machinery as well as skillful processing is necessary in order to ac-

complish the fine results possible with Kodachrome, although the problems of the photographer are reduced to a minimum.

Succeeding articles will deal with the photographic handling of Kodachrome for best results, and other technical phases of the color system.

Lighting-Sets

Props Go Modernistic • Wind and Rain Effects

WB's Swank Props

*Modern Steel Trailers
Have All Items Indexed*

Studio prop men once tossed hand props haphazardly into a series of large wooden cases and trusted to luck and remarkably long memories that they'd be able to find the ink or the incense when they needed them.

Today modern card-index efficiency and streamlined swank are finding their way into the prop department. Typical example is the group of modernistic prop wagons at Warners, four-wheeled steel trailers, one for each company in production. Drawers which slide in and out of the sides of the trucks are

indexed and the men merely refer to the card index on the inside of a swinging door to determine where to find bottle openers or detective magazines.

The bottle openers, the card index shows, rest in drawer "C," section "3" and detective magazines in drawer "L," section "8." A typical units prop array is amazing.

Among scores of items under the "As" are alcohol, apricots, ash trays and atomizers. Most of the articles, the index reveals, are in various drawers, but the apricots are in the ice-box. Each of the property trucks, among other things, carries a capacious ice-box for storage of perishable properties.

One of the largest sections of the card index is devoted to the "B's." This section lists brooms (regular,



Jack L. Warner and Mervyn LeRoy with new prop wagon.



CLARK

"THE WIND AND THE RAIN." Called forth for a motion picture. Scenes were snapped during production on Universal's "Wings Over Honolulu." Contributions like this are made to production by members of Local 37.

whisk and toy), bottles (empty, full of milk, baby medicine, etc.), books (traffic court summons, literature, dictionary, bookkeeping, etc.), bank checks, brushes (shoe, shaving, bottle, hat, tooth, etc.), bottle openers, button

hooks, and many other items. The blood, according to the index, is in the ice-box.

Riffling through the cards we find that peaches, pears and pepper are contributions of section "P" to the ice-box,

though why the pepper should be kept on ice the card-index doesn't say. The "P's" also list pins (all varieties), packages (wrapped), paper (sand, fly, writing, wrapping, wall, etc.), police whistle, badge, club, and a feather pillow.

The "Q" section is quite uninteresting, there being nothing but ruled spaces in this department but the "R's" make up for it with an assortment of rings (key, wedding and engagement), rattles (baby, snake), racing forms, rabbit's foot, rivets and revolvers.

Section "T" boasts such items as toothpicks, teething rings and false teeth. Umbrellas are the only item under section "U" and vaseline, vases (assortment) and vacuum cleaner compose section "V." Sections "Y" and "Z" are empty, yachts and zebras being the responsibility of the location and animal departments, respectively.

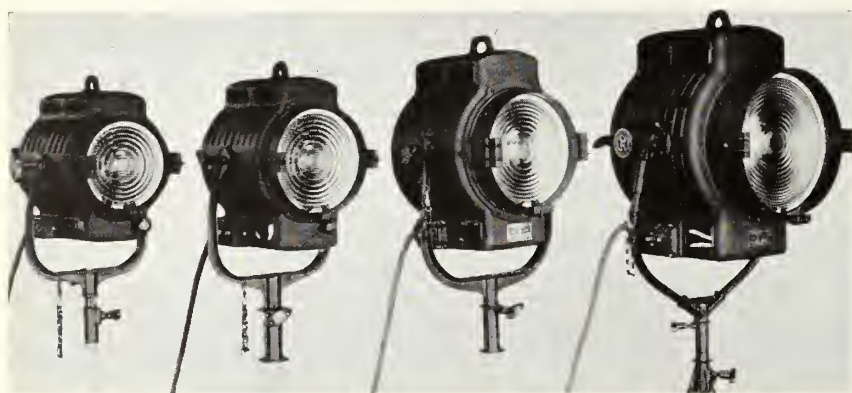
National Carbon Moves

National Carbon Company has moved its San Francisco district sales office from 599 East 8th Street to Room 524 in the Adam Grant Building, 114 Sansome Street. The office in charge of E. C. Friday, handles carbon brushes, welding carbon products, chemical carbon products, carbon and graphite specialties, graphite powders, lighting carbons and carbon arc lamps.

Beal On Television

An outstanding feature of the coming SMPE Spring Convention in Hollywood May 24-28 will be a paper on television by Ralph R. Beal, research supervisor of Radio Corporation of America, covering that organization's developments in the see-and-hear ethering.

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Scene photographed during filming of Selznick International's Technicolor production, "A Star is Born"; an original story by William A. Wellman and Robert Carson, co-starring Janet Gaynor and Fredric March.

DAVID O. SELZNICK Producer
 WILLIAM A. WELLMAN Director
 HOWARD GREENE Photographer
 W. OETTEL Studio Chief Electrician

SCREEN TEST

A difficult barrier on the course to stardom is the screen test. This scene from "A Star is Born" shows Miss Gaynor, in her role as Esther Blodgett, getting her big chance—the screen test—which will determine her future career. The

final screen test is the judgment of the theatre going public. Carbon Arc Lighting has undergone this test. The verdict is unqualified approval of the improved quality of photography which carbon arc lighting in the studio has made possible.

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Radio

Radio Time Tieup • Don Lee Television Reception

Radio Time Value

No More Summer Lulls, Sponsors Hold Spots

A stock gag around the radio network and advertising agency offices is: "Well, it looks as though radio is here to stay." This left-handed bombast was never more clearly borne out than during the past few weeks, when time came for the usual switch-over to summer shows and an hour earlier for daylight saving time. Daylight saving time came all right but few big network advertisers took any chance of losing their favorite hours. Fewer shows went off the air than at any time in radio history.

Thus it developed that particular radio times have a value entirely above their cash selling price. Supply and demand have pushed competition up to the point where any good hour, half-hour or quarter-hour spot on the major networks, has customers waiting in line for the current tenant to depart, and the usual summer lull appears a thing of the past. Eddie Cantor and Jack Benny, Fred Allen and others got their vacations, but in most instances the sponsors retained the program spot with a substitute show.

Biggest new show to hit the air for the summer is the Chase & Sanborn Sunday hour on NBC, where Haven MacQuarrie and his "Do You Want to Be an Actor?" program will be replaced May 9 with a new formula and stars: Don Ameche, 20th-Fox star and erstwhile "First Nighter" as m.c.; Edgar Bergen and his dummy, "Charlie McCarthy," as comedy toppers, and Werner Janssen, ace conductor, who recently wed Ann Harding, as musical director.

MacQuarrie leaves this month on a personal appearance tour and will resume next fall for a new sponsor. Meanwhile, with Hollywood continuing to forge to the front as the big emanation center for top network programs, it was considered likely that C&S's heavy competitor, Maxwell House, might move their Thursday night NBC hour

to Hollywood, and rumors flew thick and fast about other big shows.



Top, Charles Winninger, veteran stage, screen and radio player, features with Loretta Young and Tyrone Power, Jr., in 20th-Fox's "Cafe Metropole," reported soon to resume the m. c. spot on Maxwell House Show Boat. Bottom, Don Ameche, another 20th-Fox player who'll m. c. the new Sunday night Chase & Sanborn show from Hollywood via NBC, starting this month.



JACKSON

Edgar Bergen and his dummy, "Charlie McCarthy," who'll be a feature of new Chase & Sanborn show from Hollywood.

Don Lee Television

Operation of the High Definition Receiver

(Part I of this paper appeared in the April issue of International Photographer. It was a complete outline with accompanying illustrations and charts of the material and construction of the officially approved receiver for Don Lee high definition television, which currently is broadcast daily in Los Angeles over W6XAO in conjunction with the Don Lee station, KHJ. This concluding Part II deals with the actual operation of the receiver after it has been constructed. The material was prepared by the Don Lee Television Staff.—Ed.)

The television receiver is put into operation in the following manner: All connections having been made and checked, power circuit is turned on by SW-1. After about one minute warm-up period, a rectangle of light should appear on the cathode-ray tube screen. This should be adjusted by resistor R-11 until it is of average brilliancy. If resistor R-11 is adjusted too much in one direction the rectangle of light will be extinguished; if too far the other direction it will be very bright and unsuited for displaying the television image. The neutral or blank screen should be of half-brilliancy so that the black portion of the picture will extinguish the cathode-ray spot, and the bright portions carry it to full brilliancy. The resistor R-9 controls the focus of the tube, and this should be adjusted until the scanning lines are most clearly seen.

With no signal being received, there should be no variation of intensity over the screen, except for slight darkening at the top, which is permissible. Any traveling or stationary variations of intensity having several dark and light horizontal portions, indicate presence

of alternating current hum. This may come from improper circuit connections or conditions in the high-voltage rectifier for the cathode-ray tube; hum in the output of the radio receiver or improper connection of the cathode and heater of cathode-ray tube. It usually is found that connecting the cathode to one particular side of the heater gives less hum in the field than connecting to the other side, the particular side for any individual tube must be determined by trial connections. Whether or not the hum comes from the television receiver can be checked by removing the connection to condenser C-12. If the horizontal variations of intensity disappear, the hum is in the receiver. As previously mentioned, irregularity of the vertical sides of the beam usually indicates deflection of the cathode ray beam directly by transformers or magnetic field. This must be overcome by further separation between these units and the cathode-ray tube. This type of interference may occasionally produce residual intensity variations of the field of view and give rise to the horizontal variations of intensity which are characteristics of power supply hum. A slight amount of such variation can be tolerated, since the incoming signal is much stronger and variation is not seen, when an image is being received. When the receiver is properly constructed and adjusted, however, all hum will be removed.

After making the above adjustments without a television signal, the next step is to tune in the test signal of W6XAO. When this is properly received, it appears as 38 parallel horizontal bars in the field of view. In order to receive the signal, the several condensers C-3, C-4 of the intermediate frequency transformers must be aligned. If necessary at the start, head-phones with a series blocking condenser can be shunted from the plate of VT-6 to ground and the weak signal, which will probably be received in any event, brought to maximum intensity by such adjustment, and the separate tuning of condensers C-1 and C-15, which are best left free of each other in this preliminary adjustment. The intermediate frequency is 8,000 kilocycles and the oscillator operates 8,000 kilocycles above the incoming frequency. Its condenser, C-15, will consequently be at a smaller capacitance than condenser C-1 to bring this about. The set screws of the coupling between C-1 and C-15 may be tightened when maximum signal is secured.

If fewer bars than 38 are received, the low frequency scanning source is operating at too high a frequency, and if more than 38 are received, it is operating at too low a frequency. Proper frequency is 24 cycles per second. The high frequency source must operate at 7,200 cycles per second. With low fre-

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quency source properly adjusted, this is the point where individual scanning lines just begin to merge into a solid field for the typical 5-inch cathode-ray tube.

The next step is to receive an image. With the high frequency source off frequency, as it probably will be in this first adjustment, a great number of small black and white dots and dashes will undoubtedly be received. Vary the high frequency, adjusting knob R-18, until this closes up to a single image. This is identified by a black bar at the right of the field of view, and a single orderly representation of an image across the field of view. Preliminary to securing this adjustment, one or more images may appear slant-

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ing one way or the other, depending upon whether the source is adjusted to too high or to too low a frequency. After proper high frequency adjust-

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ment, it is possible that the image will be moving up or down. This is remedied by adjusting the low frequency resistor, R-18, until the image becomes stationary. Proper adjustment of both of these knobs should now make the image lock in step and continue to be displayed without further interruptions. It will be found with these simple types of sweep circuits that the natural frequency of the sources may tend to vary during the first few moments of receiver operation. Consequently, a few moments' warm-up period is needed. If the receiver signal is not sufficient to fully modulate the cathode-ray tube, the synchronization may not be as secure, and steps should be taken to increase the signal strength.

To bring the detail in the image to a maximum, the several intermediate frequency condensers, C-3 C-4, should now be adjusted while examining the picture. The condensers C-1 C-15 should also be checked as to over-all tuning adjustment and relation between the two, as determined by the setting of the coupling.

If insufficient signal is secured, the addition of one or even two more intermediate frequency stages is indicated. This is not difficult, because these stages are of low gain compared to the usual communications type intermediate frequency stage. For instance, the gain of the three stages, when properly constructed and adjusted for wide band pass, may not be more than one or two high gain stages as used in usual short-wave or broadcast reception. The use of a directional antenna is an excellent way to increase the signal strength and decrease the interference from automobiles or other sources. This is accomplished by placing a parasitic reflector, consisting of one piece of 1/4-inch diameter copper tubing, 11 feet long, 4 feet away from the antenna and on the side directly opposite to the television station from which it is desired to receive. This reflector is not connected to the antenna or any other metallic object in any way. It does not attenuate signals in a range of about 160 degrees in the direction toward the station to which it is aimed, but does reduce signals coming from the rear 200 degrees.

The ordinary 5-inch size cathode ray tube has been shown for this receiver because of its low cost and availability. It is possible to employ any size tube with the receiver. The 1-inch or 3-inch sizes are not recommended, however, because the focus of the spot is not sufficiently fine to secure the proper detail in the present high definition television images. For a larger cathode ray tube, symmetrical push-pull amplifiers should be added to the scanning sources, if a plated type anode on the conical side of the tube is employed in its construction. It is understood that large size

tubes without this feature are available, and that mercury vapor gas triode tubes can be used to give large scanning source outputs without amplification (*DuMont*).

The confidential Don Lee television receivers, as used for demonstrations, differ materially from the design of this receiver. However, this unit has been constructed and adjusted according to

the above directions by the Don Lee organization and also by a number of individual constructors in Southern California, who already have receivers in operation.

It is felt that such constructors as can assemble a receiver of this type will not have difficulty in modifying or improving it to keep pace with the forward march of the art.

Projection

Boothmen and Picture • Saving Silent Projectors

Booth Handling Can Help Photography

Projectionist Points Out Progress Toward Even Attention to Both Sound and Picture

(This article by a projectionist points up a trend in theatre-practice that is very important to the studios. Realization that the picture should receive just as careful projection attention as sound is being accomplished without any great amount of ballyhoo. A resumé of progressive moves in projection practice improvement also is presented.—Ed.)

About eight years ago when sound really emerged from its infancy, projectionists the country over suddenly realized that they were faced with the problem of including in their daily duties the operation of a completely foreign equipment. At that time we witnessed a wild scramble for available knowledge that was really a credit to the craft as a whole. Printing presses were kept busy turning out hand-books that were invariably out of date before we got our hands on them. Some locals started sound schools presided over by their "radio-addict" brothers. Taking everything into consideration, the craft certainly would not be over-enthusiastic if they were to accept a little pat on the back for the way they took off their coats and sailed into what looked like hopeless job. Our sound reproduction today is handled by the majority as though it were included in Richardson's first edition of his well known Blue Book.

We seem to have made but one mistake. In our haste to satisfy ourselves with our sound reproduction, we have unconsciously included a "forgotten man" in our curriculum. That man is our good friend, the cameraman. While

we were merely tolerating the projection head as a necessary evil, and at the same time handling the sound reproducer with kid gloves, the cinematographer obviously was suffering in silence. We poured light through his work, graying his whites or blacks, depending on the specific condition of the particular theatre, and let it go at that. We poked his screen full of holes, which we know did nothing but magnify what little grain sneaked through on his finished product. In fact, we treated him in rather a neglectful manner to say the least.

We have noticed several signs during the past six months that definitely point towards the correction of this situation. The Society of Motion Picture Engineers has given us a bulletin on light standardization. The Academy of Motion Picture Arts & Sciences is working on a correction of the Standard Aperture they gave us in 1932 to take care of the movietone track. There is now a sound screen available that permits good visual reproduction along with perfect sound reproduction. Simplex has given us permanent gate rods and heavier cast back plates to help eliminate wobble and warping. There is a noticeable improvement in light since the advent of the Super-X type lamp. Experiments have shown that these lamps operate at greater efficiency at close to their maximum recommended amperage. The resultant excess in illumination can very well be taken care of by slipping a stop between the combi-

The CINEMATOGRAPHER'S BOOK of TABLES

By Fred Westerberg

Cameramen Should Add These to Their Red Books

8mm. FILM DATA

HEIGHT AND WIDTH OF FIELD

Distance to Subject in Feet	FOCAL LENGTH OF CAMERA LENS IN INCHES					
	½	1	1½	½	1	1½
	VERTICAL ANGLE OF VIEW			HORIZONTAL ANGLE OF VIEW		
	14.8°	7.4°	5°	19.7°	9.9°	6.6°
	HEIGHT OF FIELD IN FEET			WIDTH OF FIELD IN FEET		
6	1.6	.8	.5	2.1	1.0	.7
8	2.1	1.0	.7	2.8	1.4	.9
10	2.6	1.3	.9	3.4	1.7	1.2
15	3.9	2.0	1.3	5.2	2.6	1.7
20	5.2	2.6	1.7	6.9	3.5	2.3
25	6.5	3.2	2.2	8.6	4.3	2.9
30	7.8	3.9	2.6	10.4	5.2	3.5
40	10.4	5.2	3.5	13.8	6.9	4.6
50	13.0	6.5	4.3	17.3	8.6	5.7
75	19.5	9.7	6.5	26.0	13.0	8.6
100	26.0	13.0	8.6	34.6	17.3	11.4

Based on Projection Aperture .130 by .173 of an Inch.

PROJECTION

Picture Width on Screen in Inches	Screen Magnification in Diameters	Relative Brightness of Screen Image	FOCAL LENGTH PROJ. LENS IN INCHES			
			¾	1	1½	2
			DISTANCE IN FEET TO SCREEN			
12	69	210	4.3	5.8	8.7	11.6
15	87	132	5.4	7.2	10.9	14.5
18	104	93	6.5	8.7	13.0	17.4
21	122	67	7.6	10.2	15.2	20.3
24	139	52	8.7	11.6	17.4	23.2
27	156	41	9.8	13.0	19.6	26.1
30	174	33	10.9	14.5	21.7	29.0
33	191	27	12.0	16.0	24.0	32.0
36	208	23	13.0	17.4	26.1	34.8
42	243	17	15.2	20.3	30.4	40.6
48	278	13	17.4	23.2	34.8	46.4

Based on Projection Aperture .130 by .173 of an Inch.

PROJECTION

16mm. FILM

The Width, Magnification and Relative Brightness of the Screen Image Obtained with Different Projection Lenses at Various Distances from the Screen

Width of Picture on Screen in Inches	Screen Magnification in Diameters	Relative Brightness of Screen Image	FOCAL LENGTH OF PROJECTION LENS IN INCHES							
			1	1½	2	2½	3	3½	4	
			DISTANCE IN FEET FROM PROJECTOR TO SCREEN							
12	32	1000	2.7	4.0	5.4	6.7	8.1	9.4	10.8	
16	42	565	3.5	5.3	7.0	8.8	10.6	12.3	14.0	
20	53	360	4.4	6.6	8.8	11.0	13.2	15.4	17.6	
24	63	250	5.3	7.9	10.6	13.2	16.0	18.5	21.2	
28	74	184	6.2	9.3	12.4	15.4	18.6	21.6	24.8	
32	84	141	7.0	10.5	14.0	17.6	21.1	24.5	28.0	
36	95	111	7.9	11.8	15.8	19.8	23.8	27.6	31.6	
38	100	100	8.3	12.5	16.6	20.9	25.0	29	33	
40	105	99	8.8	13.2	17.6	22.0	26.4	31	35	
44	116	75	9.7	14.5	19.4	24.2	29	34	39	
48	126	63	10.6	15.8	21.2	26.4	32	37	42	
52	137	53	11.4	17.1	22.8	28.5	34	40	46	
56	147	46	12.3	18.5	24.6	31	37	43	49	
60	158	40	13.2	19.8	26.4	33	40	46	53	
66	174	34	14.5	21.7	29	36	44	51	58	
72	190	28	15.8	24	32	40	47	56	64	
78	205	24	17.1	26	34	43	51	60	68	
84	221	21	18.4	28	37	46	55	65	74	
90	237	18	19.8	30	39	49	59	69	78	
96	253	16	21.1	32	42	53	63	74	84	
108	284	12	23.7	36	47	59	71	83	94	
120	316	10	26.4	40	53	66	79	93	106	

Based on Projection Aperture .284 by .380 of an Inch.

nations of our projection lens. If we do that, instead of cutting shutter openings or amperage, we do our part towards helping our "forgotten man."

Another six months along the same trend and all our cinematographer will have to do will be to keep his fingers crossed and we'll make him forget that we ever thought of neglecting him.

—M. H. C., Local 37.

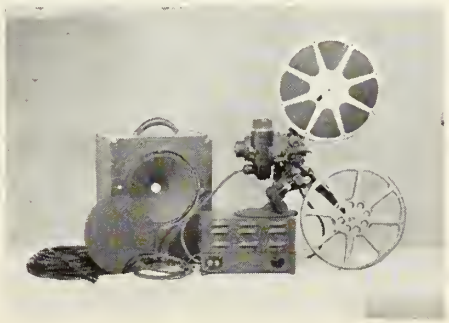
Proj S'nd Adapter

B&P Making Device to Salvage Silent Eqpt.

Balsley & Phillips have acquired "The Hollywood 16" Sound Film Adapter for 16 mm. portable film projectors, developed by Raymond R. La-Rose, who becomes vice-president of the enlarged organization in charge of engineering. Covered by patents pending

and licensed by ERPI under Western Electric and American Telephone & Telegraph Company patents, "The Hollywood 16" now is in commercial production at the Balsley & Phillips Hollywood plant.

The device is confined to the 16 millimeter field where it is creating considerable interest among educational and industrial organizations and private in-



"The Hollywood 16"

dividuals who own, in the aggregate, probably half a million silent 16 mm. projectors. It will be exploited as a means of rescuing silent 16 mm. equipment from obsolescence and reclaiming the millions of dollars now tied up in such silent equipment.

Adaptable to practically all of the better known 16 mm. projectors, "The Hollywood 16" has proved particularly efficient and practical as applied to Bell & Howell and Ampro projectors. Its appeal is stimulated by reason of its low cost as compared with the expense of complete new sound units.

The silent projector, shipped to the Balsley & Phillips plant, is returned in a new case, fitted for carrying 1600-foot reels, is completely equipped with the sound adapter, amplifier, all necessary cables and a 500-watt projection lamp, leaving nothing to buy. Entire job, completely modernized, weighs less than sixty pounds.

Hollywood Offstage

Notes and Comment Gathered by Earl Thiesen

When Gypsy Rose Lee, the girl noted for combining science and artistry in removing her clothes for reasons of the theatre, arrived to start her film contract with 20th-Fox, the studio had to have an extra studio wagon at the train to carry her trunks and boxes of clothes away.

Some children, 50 or so of them, were locked in a sound stage during filming of scenes in "You Can't Buy Luck," but they didn't mind because they got paid to eat candy and popcorn for the camera. Lew Landers, the director, ate some too. On another sound stage Preston Foster got paid to throw a bucket of water on Dick Elliott. In the role of "Stumpy" in the Bret Harte story, "Outcasts of Poker Flat," he was a drunk and he was getting water thrown on him. The scene had to be retaken six times, but Elliott didn't complain. The water was warm.

Ann Sothorn had to remove her wedding ring for the camera in scenes in "There Goes My Girl" at Radio. She almost lost it during lunch, so now she wears the ring under a band of flesh-tinted rubber.

Down in Havana, Cuba, they take their movies seriously. In the theatre, with romance and clinches on the screen, the audience keeps pace with the film emoters. To avoid embarrassment they have a special bell that warns the audience just before the theatre lights are turned up.

For the dance floor settings in Universal's "Top of the Town," 43,000 square yards of lead foil were used to deaden the sound of shuffling feet. White cloth was used on the walls instead of paint to avoid the glare of painted walls.

Lead suits have been ordered for workers for protection from the radium during the filming of the Pete Smith MGM, "Radium," while cellophane tuxedos are worn by the legsters in "Broadway Melody of 1937"—not for protection.

When "C. B." de Mille wanted daughter Katherine for a role in "The Buccaneer," he had to borrow her from 20th-Fox.

ABOUT HOMES: Jean Harlow has the telephones in her place painted the same color as the drapes; Mae West installed Venetian blinds in her apartment; and Jane Withers unknown to the propmen played house with some furniture from a set in her yet to be released "Angels Holiday" at 20th-Fox. When it came time to shoot, "Propman" Don Hill estimated he and the gang spent \$440 (cost sheet figures) looking for a coffee table that Janey had used in a make-believe house in an unused set.

A humming bird sneaked in to investigate some flowers used in the wedding scenes in the "Escape from Love" sound stage. The sound man thought an airplane had arrived.

One day's mail to Gable brought "Clarkey" a fountain pen, a marble ash tray, two new games, and a pair of suspenders. Whoever sent him a cigaret lighter this same day better send another. It won't work.

A fan in Buenos Aires sent a short-wave radio request to Joan Crawford for a photo. She sent it by airmail.

Because the girls do not give him enough romance and attention, a Chi-



GRAYBILL

High school lad wants to borrow Robert Taylor's glamor.

cago schoolboy wants to change his name to Robert Taylor and thereby get some glamour. He writes: "I am 18 and in the last year of high school and I am in despair. Girls never look at me . . . I have seen your pictures and try to act like you, but it isn't any use."

At Radio they built a complete ocean liner on the studio lot. It's a typical movie vessel. The boiler room is on one sound stage, the dining salon on another, the cabins on a third, and the rest of the ship scattered about the lot.

Don Ameche once stuffed mattresses for a living, while Bing Crosby washed pickles in a factory. Garbo likes corned beef and cabbage, we are told.



ENGLISH

CANDID FLASHES. Barbara Read was snapped informally with a Contax by Don English, Paramount stillman, during a sitting in the studio gallery. An insect intruder acted as assistant director in posing the player for this "before and after" pair of unscheduled snaps.

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People

BILL GARGAN (right) explains how it feels to make six aviation pictures within two years to Dick Purcell, Joe Sauer and Hobart Cavanaugh. Below, "cellophane" girls in MGM's "Broadway Melody."



Cronenweth

Clark



Cronenweth

Veteran Monte Blue studies for bar between film assignments.



SOPHIE TUCKER (above) last month was elected president of the vaudeville and night club AFL actors body. Left. Paramount gathered a rare collection of bald-headed men together for a scene with Bob Burns.

Richardson



Tanner



Sibbold

CANDID SERIES of features to be made by Grand National will feature Eric Linden, shown with a Univex model. Linden will play "Flash" Casey. Bottom, STAR AND DIRECTOR, in informal shots as they rehearse timing of a scene. Director is George Fitzmaurice, star, Luise Rainer, the picture, "Emperor's Candlesticks."

JACK DAWN, MGM's make-up chief, has developed a new screen make-up which is much lighter than usual and can be worn on street. Claire Owens tries it.

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AN ANNOUNCEMENT ON EYEMO

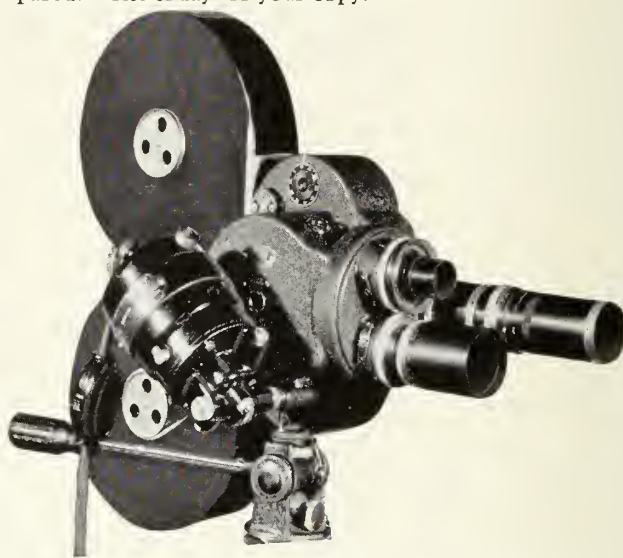
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INTERNATIONAL PHOTOGRAPHER

Vol. 9

Hollywood, June, 1937

No. 5

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A Monthly Journal Dedicated to the Advancement of the Motion Picture Industry in All Its Branches: Cinematography, Professional and Amateur; Photography, Lighting, Process, Sets and Decor., Laboratory and Processing, Film Editing, Sound Recording and the Allied Arts and Crafts of Theatre Projection and Operation.

The International Photographer, as the official publication of the International Photographers, Local 659, a part of the International Alliance of Theatrical Stage Employees and Motion Picture Machine Operators of the United States and Canada, not only represents the entire personnel of photographers now engaged in professional production of motion pictures in the United States and Canada, but also serves other technicians in the studios and theatres, who also are members of the International Alliance, as well as executives and creative artists of the industry.

CONTENTS

ON THE COVER. Production elements that every day on the set merge into the making of a motion picture, symbolizing welcome to the visiting SMPE delegates. This unusual montage was composed by Paul Allen from a series of pictures photographed exclusively for *International Photographer* by Malcolm Bullock, Local 659, on the set of Paramount's "Artists and Models" production. The pictures were made through the cooperation of Paramount Pictures, Inc. They are blowups from Contax camera shots.

People	1
Tradewinds	7-8-9-10-11-12-13-14-15
Camera	16-17-18-19-20-21-22-23-24-25-26-27
Sound	28-29-30
Lighting Sets	31-32-33
Radio	34
Laboratory	35-36-37-38-39
Hollywood Offstage	40

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INTERNATIONAL PHOTOGRAPHER

Vol. 9

No. 5

Tradewinds

S.M.P.E. Program and Abstracts of Papers Presented

40th Semi-Annual SMPE Convention Industry Engineering Society Meets in Hollywood May 24-28; Outstanding Program Presented

In the midst of one of the most progressive periods of technical improvement and equipment expansion and modernization in the history of the motion picture industry, the Society of Motion Picture Engineers came to Hollywood for its 40th semi-annual convention, May 24-28.

The comprehensive program, including abstracts of a majority of papers presented, follows:

Monday, May 24th

9:00 a.m.—Registration; Blossom Room.
10:00 a.m. to noon—Blossom Room; Business and General Session:

Opening Remarks by President S. K. Wolfe. (10 Min.)

Report of the Convention Committee; W. C. Kunzmann, Convention Vice-President. (5 Min.)

Report of the Membership Committee; E. R. Geib, Chairman. (5 Min.)

Report of the Papers Committee; G. E. Matthews, Chairman. (10 Min.)

Report of the Historical Committee; E. Theisen, Chairman. (10 Min.)

"Progress in the Motion Picture Industry"; Report of the Progress Committee; J. G. Frayne, Chairman. (20 Min.)

Further renovation of obsolete sound and picture equipment and continued expansion of studio floor space and facilities took place during past year. Another

stimulant to aroused interest in color processes was given by announcement of a new three-color subtractive process. A multi-layer emulsion contains components in the three separate layers which react with the developing solution to produce dye images in situ in the layers. The completely unblimped camera has still to be adapted for modern sound pictures but a number of refinements were introduced in mechanisms and lenses. A growing tendency to use less general illumination and more effect lighting was noted.

Push-pull recording announced a year ago has made rapid inroads against previously employed systems. One type of light-valve uses four ribbons for recording all push-pull tracks. Following lead of the Fletcher two-way horn development, systems incorporating fundamental principles of this reproducer came into widespread use. Commercial equipment for push-pull recording with ultraviolet radiation was installed in several production centers here and abroad. Use of non-slip printers was extended considerably as a further laboratory refinement.

In 16-mm. field, new emulsions were made available for ordinary and color photography, and several new cameras and projectors were announced. A gradual but definite invasion of the 35-mm. field was noted as equipment for use in small auditoriums was being adopted. Such installations would probably not compete directly with 35-mm. equipment but would augment such equipment. Summaries of motion picture progress in Great Britain, Germany, and Austria are appended to the report.

"Soft X-Ray Motion Pictures of Small Biological Specimens"; H. F. Sherwood, Kodak Research Laboratories, Rochester, N. Y. (Demonstration.) (20 Min.)

Soft x-rays have been used in radiographing leather, textiles, paper, biologi-



CONVENTION LEADERS. Among those in charge of the SMPE Hollywood convention were: Reading from Left to Right: S. K. Wolfe, President of the Society; W. C. Kunz-

mann, Convention Vice-President; J. I. Crabtree, Editorial Vice-President; Gerald F. Racket, Executive Vice-President; K. C. Morgan, Chairman Pacific Coast Section.

FOUR SMPE VETS.

Reading from Left to Right: J. Frank, Jr., Secretary; L. W. Davee, Treasurer; O. M. Glunt, Financial Vice-President; and L. A. Jones, Engineering Vice-President.



cal specimens, etc. Most recent application is in recording soft x-ray motion pictures directly on the film, using a special emulsion having a high sensitivity to soft x-rays. Radiographs were made at a speed of 16 frames per second.

Camera used was a universal model C, with lens removed and a piece of infrared gelatine filter (Wratten No. 87) covering the gate to protect the film from light, and at the same time, to furnish support for the subject. The camera shutter absorbs the soft x-rays from the tube during the short exposures between frames, thus allowing continuous operation of the tube.

A special form of x-ray tube fitted with an extremely thin window is required for the production of radiation suitable for radiographing thin subjects.

Soft x-ray motion pictures of the yellow meal worm show peristaltic waves, gas bells leaving the stomach through the mouth, and the effects of various anesthetic vapors upon the internal movements, will be shown.

"Educational Film Progress and Problems"; S. K. Wolf, ERPI Picture Consultants, Inc., New York, N. Y. (Demonstration.) (25 Min.)

During the past year educational sound film has shown greater progress than in any previous year since its inception. In September, 1936, it overcame a possible crisis when a 16-mm. standard was adopted and ratified at Budapest by the International Standards Association. Increase in production of films and sale of projection apparatus and films has more than doubled any previous year's activities in Europe and in this country. Abroad the 16-mm. educational film has been subsidized and assisted in a number of ways. In Hungary, Germany, and other countries, school children are taxed to support production of educational sound films. In some countries educational sound films are being exhibited on entertainment programs. Objective experiments have been continued with new productions, adding to already overwhelming evidence of the fact that film-taught student acquires and retains more than student instructed without films. Production in technique, particularly in the field of technical animation, has shown remarkable improvement.

While there has been continued improvements in engineering development of the educational film medium, there remain many unfinished problems that must be solved before the educational film can realize its full pedagogical and commercial potentialities. Quality requirements of the teaching film are substantially the same as those of the entertainment film. Mechanical and optical requirements are more severe. The educational film already feels need for a color process, which thus far is not

available. Different negative and print materials will probably be necessary for educational pictures. Better light-sources for the 16-mm. projection will be required. Operation of projection equipment must be simplified if it is to be used as a universal classroom teaching tool. Noise created by the operation of present projectors is distracting, and must be reduced to a level not in excess of 40 decibels. This presents a real acoustical engineering problem. Responsibility for solution of these problems lies with the motion picture engineers, and offers a real challenge to the profession as well as a great opportunity.

12:30 p.m.—Florentine Room; Informal Luncheon for members, their families and guests. Brief addresses by prominent members of the industry.

2:00 to 5:00 p.m.—Blossom Room. Studio Session:

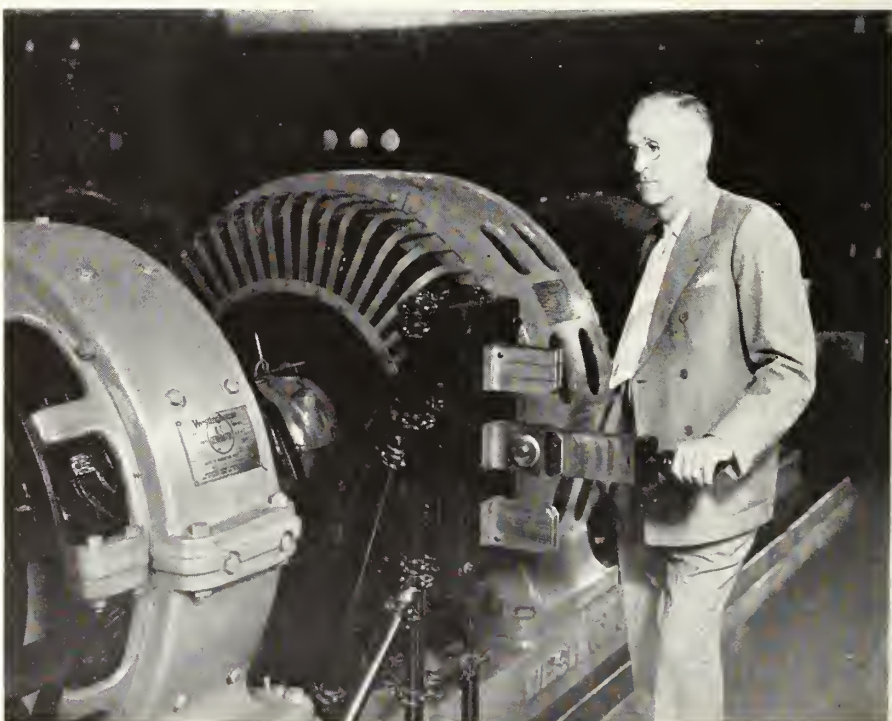
"The London Film Studios at Denham, England"; L. Fermaud, Film Productions, Ltd., Denham, Middlesex, England. (20 Min.)

"The Evolution of Special Effects Photography from an Engineering Viewpoint"; F. W. Jackman, Hollywood, Calif. (Demonstration.) (25 Min.)

Development, and particularly the pres-

ent status, of special-effects photography is discussed. In the early days, special-effects photography, or "trick camera-work," as it was then called, was not only mechanically crude, but was treated virtually as a matter of "black magic."

With general advancement of business and of individuals therein, this condition has vanished to a large extent. Today there are definite, well-established classifications of this type of photography, governed by laws as positive as those covering any other branch of engineering. In building a bridge, for instance, the structural engineer knows that if a given load is to be carried, supporting members must be of certain specifications. In the same way, the special-effects photographic engineer knows that if a certain effect is to be had, components of his shot must be properly coordinated. In a miniature, a known scale in the model, combined with equally known factors of lens, cameraspeed, etc., will combine to produce a natural effect, while any deviation from any of these will appear artificial. The same holds true of the background projection composite process, optical printing, and the like. The modern special-effects cinematographer who succeeds is the one who tackles his problems from an engineer-



CHIEF ENGINEER, Walter Strohm, shown here inspecting one of the battery of twelve giant Westinghouse generators in the new power-house at Westwood Hills Studio of 20th-Fox; one of the contributors of papers at the SMPE sessions.



FROM HOLLYWOOD. Quartet of production workers, reading from Left to Right: John Nickolaus, MGM lab's head, author of a paper; William Mueller, of WB sound, chairman local Papers Committee; J. A. Ball, of Technicolor, chairman Color Committee; W. W. Lindsay, Jr., of General Service sound, author of a paper.

ing, rather than a wonder-working point of view.

"Special Engineering Problems in a Motion Picture Studio"; W. Strohm, Twentieth Century-Fox Film Corp. (20 Min.)

The Engineering Department at the Twentieth Century-Fox Film Corporation Studios is responsible for the various technical operations of the studio, which can be classified under the headings of Air-Conditioning, Plumbing, Foundry, Mechanical, or Electrical activities.

Responsibilities enumerated above cover a considerable portion of the technical activities of a studio, and a great deal of effort is required to take care of the routine matters that arise each day. However, interesting work of this department lies in special engineering problems that arise in production of motion pictures. Solution of these problems is made much more difficult because they must always be solved satisfactorily in a very short space of time. Also, due to special motion picture requirements, commercial equipment is usually not satisfactory, and suitable equipment must be designed and built in the studio.

"A New Viewpoint on the Lighting of Motion Pictures"; G. Gaudio, A.S.C., Hollywood, Calif. (Demonstration.) (25 Min.)

Lighting of motion pictures is discussed, with relation to a new technic developed by the author and employed in several recent productions, notably Anthony Adverse and The Life of Emile Zola.

Use of artificial lighting for motion picture scenes originated with attempts to imitate the flat overall illumination produced by day-light on the early-day "day-light stages." When concepts of modeling and effect lighting were introduced, they were regarded merely as adjuncts to an overall flat general lighting. They have, in the main, so continued until today, despite great advances made by optics and sensitive materials.

The author holds that under modern conditions, this technic is faulty. He has therefore dispensed with so-called "general lighting," and has for some time done all his lighting with various types of spotlighting units. This enables him to light more precisely; to accommodate effects and equipment to physical requirements of modern production technic; and to achieve more natural effects upon the screen.

"Recent Developments in Motion Picture Set Lighting Equipment"; E. C. Richardson, Mole-Richardson, Inc., Hollywood, Calif. (15 Min.)

Basic principles of motion picture set lighting are outlined and the technic of "key" lighting, employed by most cinematographers, is discussed. Several new types of lamps that have found extensive use are described in detail. Technical data regarding them are presented

along with information on their application in cinematography.

8:00 p.m.—Technicolor feature and short program open to registered members and guests.

Report of the Color Committee; J. A. Ball, Chairman. (10 Min.)

The Eastman perforation, although adopted by the Society as a standard for positive and negative film, has certain disadvantages for use in connection with color processes and for background projection. Reasons for these limitations are analyzed, and proposal is made that important advantages of Eastman filleted rectangular shape be retained in a perforation the dimensions of which are same as those of Bell & Howell perforation. Such a perforation would fit existing Bell & Howell registering pins.

Use of a photocell having most of its sensitivity outside visible spectral region imposes an added burden to those work-

ing upon color and sound processes. Search is urged for a cell that would have all the advantages of existing caesium cells but with its chief sensitive response in the visible range.

The term "Direct Color Developer Process" is recommended for a color process wherein non-diffusing color-formers in the emulsion (multiple-layer) combine with the oxidation products of developer to form insoluble dyes. A process of this type was introduced recently by Agfa.

No Evening Program for Monday.

Tuesday, May 25th

10:00 a.m. to 12:30 p.m.—Blossom Room.

Color Session:

"Color Print Processes"; O. O. Ceccarini, Metro-Goldwyn-Mayer Studios, Culver City, Calif. (30 Min.) A comprehensive exhibit of color stills

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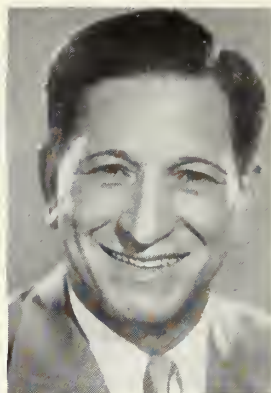
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Two big convention studio sessions were at Universal, MGM. Reading from Left to Right: Charles R. Rogers Universal production chief, and Homer G. Tasker, SMPE's Past President, who heads U's sound department; William Koenig, Academy Research Council Chairman, and Major Nathan Levinson, Technicians' Branch Chairman.



by various studios and leading color photographers throughout the country will be on display in the Hollywood Roosevelt Hotel in conjunction with Mr. Ceccarini's paper.

"Color Print Process"; O. O. Ceccarini, Metro-Goldwyn-Mayer Studios, Culver City, Calif.

Color photography applied to publicity stills represents a very valuable asset for the motion picture industry. The demand for high-quality results and speed places color stills in a special class of their own, and therefore the discussion of the various methods for obtaining color-separation negatives is carried out essentially upon the basis of these requirements. For the production of sample prints on paper, many of the available methods are discussed, such as carbon, carbro, dry transfer, chemical toning, etc., emphasis being placed upon the methods that are capable of giving results most suitable to the needs of motion picture industry. The general discussion and the extensive bibliography should be found valuable by those who wish to study the subject of color photography in greater detail.

"Light-Weight Stage Pick-Up Equipment"; L. D. Grignon, Paramount Productions, Inc., Hollywood, Calif. (15 Min.)

In past year and a half light-weight microphones and new pick-up equipment have been made available. This paper describes certain apparatus designed and built to take full advantage of newly acquired features. Apparatus described in paper consists of a fish-pole type of microphone boom with accessories and a complete stage pick-up unit.

Microphone boom is readily adaptable to a number of pick-up conditions where light weight, small size, and ease of handling are necessary.

Stage pick-up unit is readily portable and of relatively small weight and size. It includes pick-up amplifier, booster amplifier, and power supply, with a small amount of storage space. It completely replaces the large type of monitoring booth previously employed. Weight of the unit being about 300 pounds, a great saving in operating costs is effected and greater simplicity of operation achieved.

"The New Agfacolor Process"; Agfa-Ansco Corporation, Binghamton, N. Y.

A survey of the history of monopack or multilayer photographic color processes is given, including the coloring methods of greatest importance at present time. These are: (a) silver dye-bleaching methods and (b) silver dye-coupling methods. Silver dye-coupling methods appear to be most promising, and have been successfully applied to monopack films according to two distinct principles.

In one method, color-forming compounds are added to developing solutions. Color separation in this method,

depends upon control of speed at which bleaching solutions penetrate superposed emulsion layers.

In second method, employed in the new Agfacolor process, different color-forming substances, instead of being added to the developing solution, are incorporated in emulsions that are coated in superposition so that three differently colored images are simultaneously formed in a single development. Metallic silver is subsequently removed by solvents leaving only pure dye images.

This new process is based upon pioneer work on color-forming methods of R. Fischer who, before the World War, developed the process substantially as it is now being used. Contributions made by Agfa in improving process are perfection of dyestuff coupling components better than those available to Fischer, improved methods of preventing diffusion of color-forming compounds, and methods of precisely controlling manufacture of multilayer film upon a large scale, so that present film is the practical expression in commercial form of Fischer's process.

"Advanced Technic of Technicolor Lighting"; C. W. Handley, National Carbon Co., Cleveland, Ohio. (20 Min.)

Within past several months technic of lighting Technicolor motion pictures has changed from more or less flat, evenly illuminated sets of high light level to method whereby cinematographer now uses much lower level of general illumination and has greater freedom with use of "modelling" lamps.

Recent developments in arc lamps for use in Technicolor lighting are discussed. Changed technic of lighting, made possible by new equipment and laboratory advancements, is briefly explained. Uses of each type of illuminant, diffusion screens, black screens, and other lighting-control devices are described. Explanation is given of part taken by chief set electrician, or "gaffer," in lighting motion picture sets.

"Some Lighting Problems in Color Cinematography"; T. T. Baker, Dufaycolor, Inc., New York, N. Y. (Demonstration.) (25 Min.)

In an additive process of color photography it is generally conceded that primaries used are blue-violet, green, and orange bands of spectrum, which overlap to some extent in transmission, and are not narrow and sharply divided. It is also well known that latitude in exposure of a color-screen process is smaller as compared to that of black-and-white negative stock. Underexposures will frequently tend to excessive blue, and overexposures to some other predominant color, these effects being in some measure due to difference in shapes of the foot and shoulder of the characteristic curves of an emulsion when exposed to

light of the three spectral areas used. But overexposure will always result in a dilution of the colors. This is due to invasion of each primary into its neighbor's territory. There is thus a color saturation latitude in the screen or matrix, as distinct from a true emulsion latitude. Object of this paper is to discuss method of calculating the approximate range of light-intensities, that can be used in studio lighting while maintaining most correct color balance of which any particular additive color process may be capable.

In case of Dufaycolor film, a wedge spectogram representing average exposure is taken, steepness of the wedge being a suitable range, such as from a density of 0 to 2.5. This spectogram, on development and reversal, shows the peaks throughout the wedge spectrum as completely saturated (i. e., 100 per cent of the reseau or matrix saturation). But as any particular spectral zone is followed from the peak downward, toward the base-line, it is seen that as the image approaches the base-line, and therefore approaches maximum exposure, color becomes diluted and may even turn to white.

This is caused by fact that, upon overexposure, a scatter effect carries the light effect behind (say) a green element into the region of neighboring blue and red elements, so that the resultant color is reseau-green plus some blue and red, totaling reseau-green plus white. This effect is found to be accentuated in reseaux composed of less saturated color elements.

By measuring from the peak to the position in any ordinate in the spectrogram where distinct dilution of color becomes apparent, permissible range of light intensities on the set can be computed from the difference in log opacity of the two points on the ordinate.

Diagrams of apparatus used and samples of spectrograms are included in the paper, and practical examples of still and motion picture films will be shown as demonstrating advantage of keeping light-intensity range of subjects photographed within that indicated by spectrograms.

2:00 to 5:00 p.m.—Blossom Room.

Instruments Session:

"Twenty Years Development in High-Frequency Cameras"; H. Joachim, Zeiss-Ikon Aktiengesellschaft, Dresden, Germany.

Construction of high-frequency camera of the Zeiss-Ikon Company has behind it twenty years of development. Original model was designed by H. Lehmann and appeared upon German market in 1917 as the Ernemann high-frequency filmer Zeithube. Principle of this apparatus is based upon optical compensation, to which end a reflecting drum with exterior mirrors was employed as compensating element. Films exposed with these ma-



SMPE PROMINENTS.

A quartet of veterans in SMPE affairs. Reading from Left to Right: M. C. Batzel, member board of governors; A. N. Goldsmith, Past President; A. C. Hardy, member board of governors; and A. S. Dickinson, member of the board of governors.

chines exhibited a frequency up to 500 pictures per second.

New model, which first appeared upon the market in 1930, is likewise constructed upon principle of mirror compensation, with difference that instead of exterior mirrors a reflector drum is supplied with mirrors on the inside according to patents of Professor Thorner.

In this way an extraordinarily simple driving mechanism has been obtained, as well as a specially compact form; so that with a holding capacity of approximately 60 meters of standard 35-mm. film, size of the camera does not exceed dimensions of a normal cine camera. Latest model permits an exposure frequency of about 1500 pictures per second.

The camera is therefore suited for practical use in technical photography of all kinds. It can be equipped with certain intermediate lenses for close-ups or with supplementary distance tubes for distance exposures. For photographing micro high-frequency films a particular apparatus has been developed.

In order to evaluate the exposure, a time-marking device is made use of, in which a glow-lamp, controlled by an electric tuning-fork, produces the time records on the film at periods of 1/1000 sec.

"A High-Precision Sound-Film Recording Machine"; H. Pfannenstiel, Bell Telephone Laboratories, Inc., New York, N. Y. (25 Min.)

In this recording machine an improved type of sprocket drive mechanism is employed to propel film at a constant velocity at recording light-beam. In addition to film drive and control mechanisms, recorder is provided with several accessory devices to facilitate operation and thereby reduce cost of sound-film production.

These accessory devices consist of a slater, which photographically records the "take" number of the record in the sound-track area; an electromagnetically operated punch mechanism, which punches an identifying notch or hole in the film; an electromagnetically operated shutter arranged to cut off recording light-beam at an extremely high speed so that a definite and sharp cut-off point is produced on the sound-track that may be used for synchronizing purposes; and a switch mechanism to control automatically various operations of machine in their proper sequence.

Recorder may be equipped with any of the optical systems required for recording sound on single, double, or other types of sound-track. Associated with optical system is a photoelectric cell and amplifier unit by means of which direct monitoring of sound being recorded may be done.

All mechanisms and devices are enclosed within the housing of recorder and are accessible for operation. All manual controls are located upon a panel

convenient to operator on front of base of recorder. Provision is made also for remote control of such devices as slater, punch, shutter, etc., as well as starting and stopping of machine.

This recorder may be used with either Bell & Howell or Mitchell film magazines. Machine was developed by Bell Telephone Laboratories in cooperation with Electrical Research Products, Inc., to meet current studio requirements.

Symposium on Transmission Meters:

"A new Dynamic Light-Valve"; E. Gerlach and H. Lichte, Klangfilm G.m.b.H., Berlin, Germany. (20 Min.)

A description of a new type of dynamic light-valve with oil-camped mirror used in the Eurocord recording equipment. Damping by oil, though influenced by temperature, is compensated automatically.

"A Transmission-Measuring System Utilizing a Graphic Recording Meter"; W. W. Lindsay, Jr., General Service Studios, Hollywood, Calif. (20 Min.)

Need for a graphic record of transmission measurements have been recognized for many years.

The requirements that this system attempts to fulfill are as follows:

(1) Equipment must be stable, rugged, and simple to operate, and recording portion of it must be portable and operated by alternating current.

(2) Response must be independent of frequency from 35 to 10,000 cps., ± 0.2 db., and effects of line voltage changes must also remain within these limits.

(3) Effects of turn-over and waveform errors, together with interference from stray magnetic fields at power supply frequencies must be reduced to a minimum.

(4) A linear decibel scale, and a logarithmic frequency change of oscillator output with respect to time, are desirable.

(5) There should be accurate marking of the completed record in terms of the oscillator frequency dial calibration.

The first three requirements have been satisfactorily met, the fourth not at all, and the fifth partially so.

Experimentation with most of the generally known circuits, as well as several of our own, led us to believe it difficult to obtain a strictly linear decibel scale and at the same time provide required degree of stability, simplicity of operation, freedom from line-voltage changes, or tube replacements. Space limitations and lack of a suitable commercially available condenser prevented adopting a logarithmic frequency change with respect to time. A cam arrangement is the most simple solution of this problem.

It has been found that simple method of engaging oscillator dial driving pinion

at beginning of the record has been entirely satisfactory for use as a frequency fiducial for application of the transparent chart (which is marked in decibels and in frequencies corresponding to the oscillator dial calibration), to the graphic record.

A commercial audio oscillator and booster amplifier have been modified to provide uniform output, frequency control being driven by means of a synchronous motor and gear train.

A high-impedance input, Class A, push-pull amplifier system is connected to a full-wave, approximately square-law tube rectifier, d.c. output of which is connected to recording meter. Tube heaters are in series across 110-volt line, and line voltage supply is obtained by a voltage-doubling circuit without power transformer or filter chokes. By simple means, this amplifier system has been made independent of frequency over range of 35 to 12,000 cps.

Applications to which the equipment have been put are as follows:

(1) Gain runs of all kinds, including amplifiers, microphones, loud speakers, light-valves, frequency films, etc.

(2) A recording microdensitometer has been achieved by using a modulated light-source, moving sound-track past a scanning aperture, and recording amplified variations due to density changes.

(3) As a recording volume indicator instrument has been useful in studying recording and re-recording signal amplitudes.

(4) The recording meter alone has been used for making direct current or voltage records of various transient phenomena.

"A New Instrument for Producing Automatically a Graphic Record of Audio-Frequency Characteristics"; A. D. MacLeod, Tobe Deutschmann Corporation, Canton, Mass. (20 Min.)

Requirements of acoustical engineering profession for a practical tool to be employed in analysis of audio-frequency characteristics of such electro-acoustic devices as microphones, audio transformers, loud speakers, and amplifiers, and in determination of sound pressure vs. frequency as affected by baffle and cabinet design, are met by the newly developed Tobe Audi-O-Graph. This instrument incorporates the following features, which have been found essential for a usable tool: (1) It is entirely self-contained; (2) is reasonably portable; (3) covers an adequate frequency range; (4) produces a permanent record; (5) is fully automatic; (6) is provided with means for rapidly checking whole or any portion of record; (7) its recording characteristics are essentially same as those that have been adopted as standard for acoustical measurement. Construction, operating

principle, and practical application of instrument are discussed in detail.

"A Continuous Level Recorder for Routine Studio and Theatre Measurements"; G. M. Sprague and J. K. Hilliard, Metro-Goldwyn-Mayer Studios, Culver City, Calif. (20 Min.)

"A Curve-Plotting Transmission Meter"; L. A. Aicholtz, Universal Pictures Corporation, Universal City, Calif. (20 Min.)

An automatic curve drawing transmission-measuring equipment is described, similar to those developed by Metro-Goldwyn-Mayer, General Service Studio, and Paramount, which form subjects of separate papers.

Interesting feature of device is use of a vacuum tube "compressor" circuit to obtain volume scale that is approximately linear in decibels over a range of 30 or more. Since this "compressor" circuit is of peak voltmeter type, it is arranged in push-pull to eliminate wave-form discrepancies that might otherwise arise due to mis-poling of circuits under test.

Another feature of interest is provision of an 80-db. sending gain control in steps of 10 decibels, which greatly facilitates use of the equipment in straight-away transmission tests.

Circuit diagrams, photographs, and transmission characteristics of equipment are given, together with sample curves made with apparatus.

"A Curve Plotting Transmission Meter"; L. D. Grignon, Paramount Productions, Inc., Hollywood, Calif.

FOR REGISTERED MEMBERS AND GUESTS ONLY

8:00 p.m. to 11:15 p.m.—Studios of Universal Pictures Corporation, Universal City, Calif.; Special Evening Demonstration: "How Motion Pictures Are Made." Buses will be ready at 7:15 sharp at the hotel.

8:00 p.m.—Assemble on Stage 10.

8:10 p.m.—Cartoon—Oswald or Meeney Mincey & Mo.

8:20 p.m.—Welcome to Universal—Charles R. Rogers, Vice-President in Charge of Production.

8:23 p.m.—"Preparing a Story for Production"; Martin Murphy, Production Manager.

Story Conference.

Shooting Scripts.

Scheduling Players and Equipment.

8:35 p.m.—"Prescoring for Song Sequences"; Bernard Brown, Chief Music Dubbing Mixer. (Demonstration.)

8:50 p.m.—Adjourn to production stage.

9:05 p.m.—"Set Design from Script to Stage"; illustrated by the set used for remainder of this program; John Harkrider, Supervising Art Director.

9:15 p.m.—"Production Handling of Lighting Equipment"; Frank Graves, Superintendent of the Electrical Department.

9:25 p.m.—"Lighting a Long Shot and Close-Ups"; Joe Valentine, Director of Photography. (Demonstration.)

"Sound Pick-Up on a Long Shot and Close-Up"; William Hedgecock, Production Mixer. (Demonstration.)

"The Director's Problem"; Henry Koster, Director. (Demonstration.)

10:15 p.m.—Return to Stage 10.

10:30 p.m.—Projection of "dailies" made in the demonstration above.

10:35 p.m.—"Editing Motion Pictures"; Maurice Pivar, Supervising Editor. (Demonstration.)

10:55 p.m.—"Setting Music to Motion Pictures"; Charles Previn, Musical Director.

11:15 p.m.—"Assembling a Final Sound-



Elmer C. Richardson, member the local Papers Committee.

Track"; Edwin Wetzel, Dubbing Mixer. (Demonstration.)

Wednesday, May 26th

10:00 a.m. to 12:30 p.m.—Blossom Room. Acoustics and Sound Session:

"Acoustical Progress Abroad"; V. O. Knudson, Professor of Physics and Dean of Graduate Study, University of California, Los Angeles, Calif. (25 Min.)

Some recent developments in acoustics, especially in Germany, Russia, and in the author's laboratory, are reviewed.

Experiments by E. Meyer, of Berlin, help to clarify the differences between geometrical and diffuse reflections of sound in rooms, and reveal the nature of some of the errors inherent in reverberation measurements. Meyer also describes special absorbent materials, as thin wood panelling or stretched oilcloth, which are selectively absorbent for low frequencies.

S. Rschevkin, of Moscow, describes a method for prolonging, diminishing, or otherwise modifying the reverberation in a room by means of Helmholtz resonators.

A new electroacoustical device for the artificial production of vowels, by K. W. Wagner, of Berlin, is capable of generating typical German vowels that can not be distinguished from the originals. The oscillogram and sound spectrum of the artificial vowel resemble more closely the oscillogram and sound spectrum of the original vowel than do two sets of oscillograms and sound spectra of the same vowel "picked up" at two different microphone positions in the same room. The experiments reveal the nature of sound distortion caused by reflections from the boundaries of a room; they also show that the ear tolerates considerable distortion.

The paper concludes with a review of some recent work undertaken by the writer, including resonance in rooms, the acoustical design of broadcasting studios, and vistas in musical acoustics.

"Mathematical Relations between Grain, Background Noise and Characteristic Curve of Sound-Film Emulsions"; W. J. Albersheim, Electrical Research Products, Inc., New York, N. Y. (25 Min.)

Computations and measurements show that background noise of film can be interpreted as superposition of two types of noise; first, surface noise, and second,

grain noise. Surface noise power decreases with the square of specular transmission; grain noise power reaches a maximum at 50 per cent transmission. Accordingly, it is found that under conditions of variable-width recording surface noise is predominant; for variable-density recording, grain noise is the main factor. Average area of the grains or grain clusters can be calculated from the signal-to-noise ratio; their average volume from total weight of silver per square centimeter at a given density. For equal grain sizes, surface exposure such as obtained by ultraviolet illumination is definitely noisier than penetrating exposure.

Upon the basis of random three-dimensional distribution of sensitized grains and of the quantum theoretical findings of previous investigators, shapes of H&D curves were calculated. Assumption that a halide grain is sensitized by a single photon leads to a toe shape that is more rounded than those found in practice. Actual shape of the characteristic from toe to shoulder is accounted for by the assumption that it takes two photons to sensitize a silver halide grain.

Experimental fact that the straight portions of H&D curves obtained from same emulsion at various gammas originate from a single point which is depressed by bromide content is explainable by taking into account the fact that emulsion contains silver halide grains of more than one size and speed.

"Improved Noise-Reduction System for High-Fidelity Recording"; J. O. Baker, C. N. Batsel and H. J. Hasbrouck, RCA Manufacturing Co., Inc., Camden, N. J., and Hollywood, Calif. (25 Min.)

This recently developed method for making noiseless film records uses a twin mask shutter and replaces the familiar biased galvanometer and displaced zero line. The new noise-reduction arrangement was developed for either standard RCA symmetrical sound-track or class A push-pull, which is rapidly gaining favor because of its numerous advantages. These include cancellation of "zero shift" or distortion sibilants, and elimination also by cancellation of any sounds caused by action of the ground-noise system such as shutter "thumping." Ground-noise timing can be successfully speeded up.

When combined with ultraviolet light new optical system and noise-reduction method are capable of producing records of extreme quietness and great brilliance, free from sibilant distortion and other extraneous noise. More consistently good recording is possible because maintenance of equipment is made easier and more accurate by means of precision adjustments.

As compared with previously used shutter systems, appreciable decrease in ground-noise is now achieved by extremely sharp focusing of both shutter masks and recording aperture, which are all in effectively same plane, avoiding "soft" focus image experienced when a shutter is positioned as close as possible but not sufficiently close to mechanical slit. Placed where it is, new shutter also greatly reduces amount of light falling upon galvanometer at low modulation levels so that less stray light enters slit and there is a minimum chance of fogging in the clear unmodulated portions of sound negative.

Since shutter edge images are perpendicular to mechanical slit, photographic sharpness is greater than could be realized were edges at a more acute angle to

the slit, as would be the case with a single mask of triangular shape.

A new optical monitoring system is introduced providing easy and accurate observation of both speech modulation and ground-noise reduction action at same time. The light-spot is larger and can be focused sharply upon the card. More light is provided, making visible instantaneous amplitudes not regularly repeated and of high frequency, known as "fringe." These high-frequency peaks, although very dim, are frequently observed, extending well beyond body of modulation.

"An Automatic Sound-Track Editing Machine"; G. M. Best, Warner Brothers Pictures, Inc., Burbank, Calif. (15 Min.)

The sound-track cutter requires a film reproducer in his daily routine work; a reproducer that can be threaded quickly and will not tear or damage the film, and will produce sound quality of sufficient excellence to judge splits or cut-outs in music recording.

Such a device has recently been developed, and its mechanical details and operation are described. By means of a geared motor drive and a series of friction rollers, the sound-track is fed past the light-beam of the reproducing system at standard speed, with a reversible feature that is automatic and instantaneous. No sprockets or clamp rollers are used, and work of the cutter is speeded materially through its use.

2:00 to 5:00 p.m.—Visit to Twentieth Century-Fox Film Corporation, Beverly Hills, Calif.

7:30 p.m.—Blossom Room. Semi-Annual Banquet. Short addresses by eminent members of the industry. Introduction of stars and prominent guests.

Thursday, May 27th

10:00 a.m. to 12:00 p.m.—Open Morning. Studio visits may be arranged through Local Committee.

1:10 p.m. to 5:00 p.m.—Blossom Room. Laboratory and Projection Session:

"A Device for Direct Reproduction from Variable-Density Sound Negatives"; W. J. Albersheim, Electrical Research Products, Inc., New York, N. Y. (25 Min.)

Variable-density negatives exposed on the toe of the H&D curve have been known to be superior in brilliance and high-frequency response to average sound-print, although they show some harmonic distortion. Variable-density negatives recorded on the straight-line portion of the characteristic are highly distorted, but show a remarkably low background noise level.

In order to eliminate negative distortion, playback apparatus should produce same type of compensating distortion that occurs in a straight-line print; that is, output should be a negative power function of input. The exponent, called apparatus gamma, should be variable, to fit variations in negative gamma. Preferably, apparatus should be capable of reproducing prints as well as negatives. These purposes are achieved in negative playback unit, RA-222, by four distinct steps:

(1) An essentially linear input stage usable for reproduction of prints.

(2) An exponential feedback stage which converts the output of the first stage into a logarithmic form.

(3) A linear, variable-gain stage which reverses the polarity and provides gamma control.

(4) An exponential output stage which converts the logarithmic response into the desired power function.

Possibility of reproducing straight-line variable-density negatives opens up following fields of use:

Quality of newsreels and other rush shows can be judged before printing.

Correct gamma of newsreel negatives can be estimated from the best setting of the reproducer gamma control.

Release negatives can be obtained by rerecording directly from original negatives, with saving of time, printing expense, and with improved quality.

To obtain highest quality of reproduction for special first-run showings, sound-track may be a negative directly rerecorded from original without intervening printing process.

All these uses have been successfully made of the negative playback unit. It is a self-contained, a-c. operated apparatus, which can be adapted to existing types of film reproducers. By a single switching operation it can be set for reproduction of positive prints or of negatives. Calibrated control makes it adjustable to reproduction of variable-density negatives of a wide range of gamma. In addition, gain control and adjustable low-frequency equalization have been provided.

Results are being demonstrated by reproduction from typical variable-density noise reduction negatives to show increased clarity, volume range, and freedom from noise reduction "hush-hush."

"Sound Pick-Up Methods for Motion Pictures"; J. P. Maxfield, A. W. Colledon and R. T. Friebs, Electrical Research Products, Inc., New York, N. Y.

Proper recording of sound requires not only requisite pick-up technique but suitable acoustic surroundings to enable its most flexible use.

The paper, therefore, discusses first acoustic requirements of sound picture stages, sets, etc., with special reference to scoring, whether before or after taking picture.

With this background, various methods that have been developed for obtaining and controlling desired amount of acoustic perspective are treated. In particular, consideration is directed to factors for which quantitative values have been determined. Discussion of the practical means for using these quantitative factors is given. Preliminary information on application of these techniques to stereophonic recording and reproduction is discussed.

"Changing Aspects of the Film Storage Problem"; Capt. J. C. Bradley, National Archives, Washington, D. C. (20 Min.)

Photographic film records are taking on new values. Business concerns, libraries, government agencies, and private collectors are beginning to realize future value of photographic records. Hope that such records may be preserved over a long period of time has given impetus to storage plans, both in terms of chemical preservation and fire prevention. Volume to be stored is increasing rapidly. Federal Government's interest in aerial photography has resulted in an undreamed of volume of aerial film maps and additional government agencies are making use of motion pictures. The volume in government circles alone will shortly exceed one hundred tons. The principle of unit isolation and unit application of cooling agent seems most logical in the prevention of film fires.

Report of the Projection Practice Committee; H. Rubin, Chairman. (25 Min.)

Among projects under consideration by the Committee during past six months are those of screen brightness; its desirable values and methods of measuring it; the question of using a visual test-pattern for checking screen illumination; revisions of the projection room plans; questions of projector motors and take-ups, and difficulties incident to starting of projector motors; requirements of sound screens; and a recently initiated survey of theatres throughout the United States to determine not only existing conditions of projection, but also for purpose of establishing a set of recommendations regarding theatre structures.

Report of Exchange Practice Committee; A. W. Schwalberg, Chairman.

"A Wide-Range, Linear-Scale, Photoelectric Cell Densitometer"; W. W. Lindsay, Jr., General Service Studios, Inc., Hollywood, Calif., and W. V. Wolfe, RCA Mfg. Co., Inc., Hollywood, Calif. (25 Min.)

Need for an instrument having wide range of density and linearity of scale calibration has been recognized for some time. The more general types of instrument involve balance of two illuminated spheres by visual observation, and are therefore to a large extent dependent upon skill and fatigue of observer.

Various forms of photocell densitometers have been built and are in general use in most studios. Majority of these instruments utilize a meter with a scale calibrated in density or per cent transmission. Physical factors impose a scale calibration that becomes rapidly congested as the higher density end is approached.

The writers undertook construction of a densitometer along different lines, involving use of a modulated light-source, a stable, high-vacuum photocell, and an amplifier having essentially constant gain, in conjunction with a precision attenuator containing a linear decibel scale, and a multiplier. The amplifier has band-pass characteristics, to eliminate harmonics and power supply frequencies. An indicating meter of rugged construction is used.

Instrument operates as follows: Photocell is placed in operating position; gain of the amplifier is adjusted so that zero density point on attenuator scale reads reference meter deflection; then unknown density is inserted, and amplifier gain readjusted to read reference meter deflection again. By suitable calibration, gain of the amplifier may be interpreted in terms of density.

Apparatus has been in use, giving satisfactory performance, for a period of two years. During past year, addition of a Raytheon voltage regulator has reduced line voltage fluctuations to minimum.

"Standardization of Photographic Density"; C. Tuttle and A. M. Koerner, Kodak Research Laboratories, Rochester, N. Y. (25 Min.)

It is desirable that all laboratories dealing with photographic problems shall be in agreement upon the significance of the term "density," and that means for numerical determination of this value shall be specifiable.

In different optical systems, apparent "light stopping power" of a given photographic image specimen will vary because of manner in which the sample reflects, scatters, and absorbs light. Since numerical value obtained depends upon characteristics of the optical system used in the densitometer, it becomes necessary to specify the optical system to be used as a reference standard. Because it may

be definitely specified, integrating sphere is suggested as the light collector for this standard optical system. Precautions that must be followed in use of the sphere for this purpose are enumerated.

It is shown that once some standard optical system is adopted, several other types of optical systems may be employed in practical instruments if calibration of these instruments is made under actual working conditions with photographic images previously measured in system adopted as standard.

"Objective Quantitative Determination of Graininess in Photographic Emulsions"; A. Goetz, Associate Professor of Physics, California Institute of Technology, Pasadena, Calif.

A graininess meter as an instrument for objective and quantitative determination of density fluctuations of photographic emulsions is described. The instrument, specially designed for this purpose, produces a microphotometric record of a uniformly exposed area in terms of relative transparency fluctuations (T/T_m); T_m = mean transparency). Resolving power of optical system is larger than individual grain size, so that granularity as well as graininess is recorded. Unlike usual microphotometric records, records are produced in such a way that they can directly undergo a process of partial integration in a photoelectric integrator designed for the purpose. Thus a record of distribution of transparency fluctuations is directly obtained. In addition, sum total of fluctuations can also be obtained. The former, however, is chosen to determine a measure of the graininess in form of a logarithmic average obtained by a simple graphical method which weighs size of fluctuation in approximation to subjective impression. Average of the transparency fluctuations relative to mean transparency of specimen thus obtained is used as expression for graininess.

The graininess meter has been applied to the following problems: Graininess-density diagrams of various commercial negative and positive film materials; effect upon the emulsion by variation of mode of development; quantitative measurement of increase of graininess in contact prints with respect to graininess qualities of negative materials from which print is made; effect of optical nature of printing light upon graininess increase of the print.

"Sound-Track Blooming"; F. D. Williams, Williams Laboratory, Hollywood, Calif. (20 Min.)

A demonstration of various methods of blooming sound-track films, with special emphasis on the "flash" method. A series of drawings and film exhibits will be used to show a direct comparison of methods and explain value and qualities of each system of blooming.

"A Dubbing Rehearsal Channel"; H. G. Tasker, Universal Pictures Corp., Universal City, Calif. (25 Min.)

Preparation of sound effects, music and dialog tracks for dubbing process requires accurate synchronism of each sound with corresponding action. This is ordinarily accomplished by a preliminary step in which synchronism of one sound-track at a time is checked against action in a moviola, in which picture is seen through a small viewing lens.

Image being small, accuracy with which synchronism may be checked is not good. Hence this is followed by a final step, in which synchronism of all tracks is checked during rehearsals in dubbing room proper. Owing to ponderous character of the dubbing machinery, latter

process is quite slow and laborious.

This paper describes form and use of machine that permits accurate synchronism of various sound-tracks with corresponding action, but with all mechanical freedom of the usual moviola.

Machine will accommodate six sound-tracks, with provision for controlling the output level from each, and may be instantly started, stopped, or reversed. Mechanical design facilitates threading and easy displacement of any sound-track by a known amount to bring it into synchronism. Action is projected upon a screen $4\frac{1}{2} \times 4$ feet in size, which enables accurate observation of degree of synchronism attained.

"Fixing Baths and Their Properties"; J. I. Crabtree, H. Parker, Jr., and H. D. Russell, Kodak Research Laboratories, Rochester, N. Y. (20 Min.)

In addition to removing unexposed silver halides from an exposed and developed emulsion, the fixing bath should (a) arrest development immediately, and (b) harden the gelatin film so as to prevent excessive swelling during washing and reduce mechanical injury during handling.

Fixing agent usually consists of sodium or ammonium thiosulfate, or a mixture of sodium thiosulfate with ammonium chloride. The bath also contains an acid (usually acetic acid) to arrest development; sodium sulfite, which inhibits the precipitation of sulphur; and potassium or chrome alum, which tans the gelatin.

Addition of developer carried into fixing bath tends to cause precipitation of aluminum sulfite, but this can be prevented by (a) revival of the bath with acid at intervals, or (b) addition of boric acid, which also extends the pH range over which effective hardening is obtained. The exhaustion point at which revival should occur may be determined with pH indicators.

(c) hardening life.

3:45 p.m.—"Toning Positive Film by Machine Methods"; J. M. Nickolaus, Metro-Goldwyn-Mayer Corporation, Culver City, Calif.

4:10 p.m.—"Fixing Baths and Their Properties"; J. I. Crabtree, H. Parker, Jr., and H. D. Russell, Kodak Research Laboratories, Rochester, N. Y.

4:35 p.m.—"Practical Applications of pH Control in Motion Picture Processing"; D. K. Allison, Chemical and Research Corporation, Hollywood, Calif.

A discussion of the significance of pH, with special emphasis on the practical aspects. Quantitative curves and data are given showing the relation between the pH of photographic developers and the inertia and gamma of the developer. In the average positive developer, an increment of 0.3 pH units corresponds with a change of four printer lights. The relationship between the amphoteric nature of gelatin and its properties in solutions of different pH values is discussed. It is shown by the use of curves and data that the efficiency of washing and drying operations is increased two- to four-fold by control of the pH of the processing solutions near the iso-electric point of the gelatin of the emulsion. Elimination of hysteresis in emulsion swelling through pH control effects improvements in sound quality.

8:00 p.m. to 10:30 p.m.—Metro-Goldwyn-Studios, Culver City, Calif. Meeting of the Research Council and the Technicians' Branch of the Academy of Motion Picture Arts and Sciences; William Koenig, Chairman, Research Council; Major N. Levinson, Vice-Chairman, Research Council and Chairman, Technicians' Branch.

Members and guests of the SMPE are cordially invited.

"Cooperative Technical Program of the Research Council of the Academy of Motion Picture Arts and Sciences"; William Koenig, Chairman, Research Council. (20 Min.)

"The Work of the Committee on Standardization of Theatre Sound Projection Equipment Characteristics"; John Hilliard, Chairman. (25 Min.)

Projection and Discussion of Outstanding Films Illustrating (1) Sound Quality, (2) Color, (3) Special Effects, (4) Unusual Photography. Arranged by the technicians of the Hollywood Studios.

Friday, May 28th

10:00 a.m. to 12:30 p.m.—Blossom Room. Apparatus Symposium and Manufacturers' Announcements.

"The Super Simplex Pedestal"; J. Frank, Jr., International Projector Corporation, New York, N. Y. (15 Min.)

New Super Simplex pedestal embodies a number of unique features, including spirit-level; lamp house table, with universal joints permitting accurate adjustment; sufficient mass to assure steadiness of the projected picture; support arms for various makes and types of sound head attachments; spacers to permit the use of existing port holes; and a lateral adjustment device.

"A New Film Mutilator Machine"; O. F. Neu, Neumade Products Corporation, New York, N. Y. (Demonstration.) (15 Min.)

To circumvent film pirates who for years have been exhibiting film productions in various parts of the world without properly compensating producers, a film mutilator has been developed.

The Neumade film mutilator housing is constructed of cast iron; steel rippers in an aluminum mutilating jaw perforate the film as it passes through brass film-guides and rollers. Each frame is perforated, completely destroying picture and sound-track, making it absolutely impossible to reprint, duplicate, or exhibit the film. There are two models having four types of perforations: Single perforation in frame; double-staggered perforations in frame; double perforations, one in frame, the other in sound-track; triple perforation, double-staggered in frame, the other in sound-track. One model is hand driven, other motor driven. Film is fed automatically into a slot in left side of the housing, passes over the mutilator hub and perforators, and out through slot on other side.

"Complete Cue-Mark Elimination Plus and Automatic Change-Over"; S. A. MacLeod, Automatic Change-Over Co., Los Angeles, Calif. (15 Min.)

The vexing problem of cue-marking, both by producers and projectionists, is well known to all. Defaced cue-marked films have not only been costly and troublesome to producers and projectionists, but, most important of all, have resulted in poor picture presentation to the theatre-going public.

Elimination of all cue-marks or any need of them, plus an automatic, electric transfer to the oncoming projector, is now possible through the use of an automatic change-over mechanism which automatically performs the following operations: (1) gives a buzzer warning; (2) starts the oncoming motor; (3) changes over the dowsers; (4) changes over the sound.

Two trigger fingers or levers attached

by means of a side plate to the reel, set by the projectionist between the film windings, predetermine the timing. The unwinding film, releasing each finger, causes an impulse to be carried mechanically by means of pawls to two half-round plunger shafts in the magazine's hollow axle or spindle shaft. This spindle supports at its outer end a switch housing, enclosing two mercury switches. The mechanical impulse by means of the plunger shafts is here converted into an electrical impulse.

These electrical impulses are then carried to a main control cabinet mounted upon the wall between the projectors, conveniently accessible to the projectionist, and embodying automatic electric interlocks, relays, solenoids, and features for controlling the operations. The regular controls remain unaltered, allowing a return to the old "manual or visual" controls if desired. Entire unit may be adapted to all present makes of standard projection equipment, and film trigger plates may be quickly attached to standard reels.

"Magnetic Recording-Reproducing Machine for Objective Speech Study"; S. J. Begun, New York, N. Y. (Demonstration.) (15 Min.)

A small sound recording machine that utilizes the magnetic method has been developed. This machine is especially adapted for students, speakers, singers, and others who wish to improve themselves along their particular line of endeavor.

Machine utilizes an endless steel tape as sound carrier. Recording time is approximately thirty seconds. Steel tape is moved over four rolls on the edges of a metal framework. The amplifier, loud speaker, and the mechanical parts for driving the steel tape are built inside the framework, and all are encased in a portable cabinet. Switches are provided upon a panel for operating amplifier and motor. A plug connects the microphone to the machine. Normally the machine is set for reproduction, but when the push-button is pressed for only an instant, it is possible to record for thirty seconds. After this interval has elapsed, push-button falls back into its original position and machine continues to reproduce until the push-button is again pressed and a new record made. An indicating system is used in conjunction with the push-button to mark off the recording time. As the method of magnetic recording is used, it will not be necessary to change the steel tape during the life of the machine. The circuit is so designed that making a new record automatically wipes out the previous one.

The machine has a frequency response of from 150 to 4,000 cps. Ordinarily a carbon microphone is provided, but for obtaining quality of reproduction, a magnetic-coil microphone is recommended.

"Infra Red Negative as Applied to Special Effects Photography"; G. W. Hough and W. Leahy, Agfa-Ansco Corporation, Hollywood, Calif. (Demonstration.) (15 Min.)

A new type of 35-mm. Infra-red negative is discussed, with special reference to the practical application of this type of film to certain phases of motion picture production. Sensitometric and general data are given comparing this type with existing panchromatic and Infra-red sensitive emulsions.

"Laboratory Equipment for the Small Laboratory"; Arthur Reeves, Hollywood, Calif. (15 Min.)

Although technical problems faced by

motion picture processing plants located away from great centers of production are the same as those encountered in Hollywood, they are of a different order of magnitude, due to the smaller volume of work to be handled. For the same reasons, economic considerations, such as avoiding duplication of machinery, etc., are of unusual importance. Notwithstanding this, quality of equipment used and of work put out should adhere to the same high standards demanded in the finest major studio laboratories of any production center.

This paper describes laboratory equipment built to meet these needs, including a developing machine, so designed that it may be used interchangeably for processing negative and positive film, alternating these two types of service without requiring re-threading.

11:30 a.m.—"Two New Emulsions for Duplicating Work"; Eastman Kodak Company, Hollywood, Calif. (Demonstration.)

11:45 a.m.—"A New Type Double Film Attachment"; E. C. Manderfeld, Electrical Research Products, Inc., Hollywood, Calif.

12:15 p.m.—"A Combined Viewing and Projection Machine With or Without Sound"; I. Serrurier, Moviola Co., Hollywood, Calif. (Demonstration.)

"Present Aspects in the Development of 16mm. Sound"; A. Shapiro, The Ampro Corporation, Chicago, Ill. (20 Min.)

2:00 p.m. to 5:00 p.m.—Blossom Room. Sound Equipment Symposium:

A review of recent developments in 16-mm. sound, including technical advancements and perfections contributing to raising standards of illumination and quality, and discussion of extent to which limitations of picture size and audience have been raised for large-audience performances.

Adoption of 16-mm. sound-film for educational purposes is discussed. Its function as a medium for auditorium instruction for general education of an extra-curricular nature and its use in the classroom as a corollary to textbook and oral instruction are treated. Use of sound-films for unusual or difficult experimentation is not practical in the ordinary school.

There has been an increasing use of 16-mm. sound for commercial and industrial purposes. An example is the extensive use made of such films by automobile manufacturers for sales exploitation. Picturizations of plant and manufacturing processes have been used as convincing evidence of quality and precision manufacture.

Report of the Non-Theatrical Equipment Committee; R. F. Mitchell, Chairman. (10 Min.)

A summary is presented of correspondence conducted with the British Institute of Cinematography. The report of this organization is abstracted as follows: (1) A theoretical analysis of the light losses in a projector using direct illumination is made, showing that for every 100 lumens emitted by the lamp, only 2.43 lumens find their way through the projection lens; and (2) it is suggested that unit intensity be used as a method of comparison between one projector and another and that 1 foot-candle be regarded as an average value for home use and 4 foot-candle for small auditoriums.

Objection is taken by this committee to the latter proposal, and the opinion is expressed that the suggested values are

too low. A satisfactory intensity should cover projection of adequate quality.

Attention of the Society is directed to the matter of standardizing the procedure for the determination of total screen lumens.

"The SMPE Test Reel for 16mm. Sound-Film"; M. C. Batsel, RCA Manufacturing Co., Inc., Camden, N. J. (10 Min.)

"A Sound Kodascope"; E. C. Fritts and O. Sandvik, Eastman Kodak Company, Rochester, N. Y. (Demonstration.) (25 Min.)

Report of the Standards Committee; E. K. Carver, Chairman.

Report of the Sub-Committee on Film Perforation; J. A. Dubray, Chairman. (20 Min.)

"A Combination Picture and Non-Slip Ultraviolet Automatic Printer"; O. B. Depne, Chicago, Ill. (Demonstration.) (20 Min.)

This printer has the following features: The picture-printing head gives a full-width picture, uses a standard aperture, and a sound aperture white light. The sound printing head is non-slip, uses ultraviolet light, has a rotary stabilizer, a generator supply for the light, and an automatic light-control board.

Both picture and sound-head driven by separate 3-phase motors to assure steady film motion. Motors are mechanically tied to assure synchronism in starting and stopping, and are equipped with compensating device allowing the motor to slip instantly into phase with bucking.

4:05 p.m.—"The RCA Recording System and Its Adaptation to Various Types of Sound-Track, with Demonstration of Recent Recordings of the Class A Push-Pull Type"; G. L. Dimmick, RCA Manufacturing Co., Inc., Camden, N. J.

4:30 p.m.—"A Linear Decibel Scale Volume Indicator"; F. G. Albin, United Artists Studio Corporation, Hollywood, Calif.

8:00 p.m. to 10:00 p.m.—Blossom Room. "RCA Developments in Television"; Ralph R. Beal, Research Supervisor, Radio Corporation of America, New York, N. Y. (1 Hour.)

A brief review is given of the studies made of the several characteristics of television images and other factors that have been effective in establishing standards, in determining satisfactory performance, and in guiding the step-by-step development of the RCA electronic system of high-definition television.

The system employs the "Iconoscope," a cathode-ray tube for translating the visual image into electrical impulses, and the "Kinescope" for transforming the electrical impulses back into the variations of light-intensity to reproduce the image. Sensitivity and characteristics of the "Iconoscope" as a pick-up device are discussed.

The fundamentals of the RCA high-definition television system now under experimental field test in the New York area and the standards presently employed are reviewed. Photographs of the studios and other parts of the field-test facilities are included. A brief review is given to indicate the progress made and the results attained up to the present time in these field-tests.

The technique of formulating and presenting television programs is peculiar to the requirements of television. Development of the technique is presently related to programs employing artists in studios, outside pick-ups, and motion picture film. The requirements of program technique are discussed.

Camera

Zep • News Color • Kodaks • Dupont 300 • Eyemo

Zep Crash Through Newsman's Eyes

Movietone News Cameraman's Own Story of Picture Coverage of Tragic Hindenburg Blaze Disaster

(The experiences of a news-reel cameraman in covering the sensational Zeppelin disaster at Lakehurst last month. The story was written exclusively for *International Photographer* by Al Gold, veteran news photographer, of the 20th Century-Fox Movietone News staff.—Ed.)

A nightmare in actuality. That is the best way to describe the Hindenburg disaster. Looking through my finder it didn't seem possible that what was being registered there was really and truly so. "It's a dream," I said to myself. It wasn't until hours after, as exhausted we gathered in the big hangar, that any of us could bring ourselves to believe that it all wasn't some sort of a nightmare.

What does a cameraman feel when a story of such terrible proportions breaks before his lens? Don't ask me. I couldn't for the world remember exactly what my feelings were as I looked through my finder. Unconsciously I knew my camera was working properly. I remember thinking that my take-up belt was wet from the rain. It was drizzling; an hour before the disaster we had a thunderstorm. We all sat, wringing wet, beside our cameras mounted on the roofs of our trucks and exchanged vituperatives about the weather and the editors who assigned us to the story.

This wasn't news any more. Suppose we had to cover every boat that came over the Atlantic. Here was a big air liner that made the trip many times before with clock-like precision. It won't come down, anyhow, until it is too late to make pictures, we thought. Thank God for the mooring mast, we were set up beside one of its massive legs, if the lightning strikes in the

vicinity it will hit it, not us, we speculated idly.

"Here she comes," somebody shouted.

"So what," someone else cracked sarcastically.

We didn't even bother to get up from our squatting positions to focus until she began to drop ballast. Then as they dropped the landing ropes we got busy. When the explosion occurred I was shooting the ground crew grappling with the ropes. Instinctively, without a thought, I panned up to the silver bag looking in my finder to see what was happening. From then on what happened to me or my camera is a confused memory.

It only took about thirty seconds for the big bag to strike the ground after the explosion. But if the Board of Investigation calls me, I could never swear to that. It seemed an age or a moment. I couldn't believe that what I was seeing was true. "I'm dreaming,"

I said to myself over and over. The sense of time was like that in a dream.

I could hear only the grinding of my camera. Whatever other sounds were around that blazing pile never came to my ken. That there must have been hollering and screeching and the roar of flames I know, but I didn't hear them. My wet belt was working. The film was unwinding before my lens. "I've got everything I can from this angle," I thought.

"Hey, Ad," I shouted to Addison Tice, my soundman, "let's move in."

"Can't make a foot, Al. The mud's too deep," he answered, calmly as though we were out on a picnic. "Hand me down the camera, we'll have to walk."

Shutting the motor off and putting a lens shade on my two-inch, I hoisted the camera to him, asking Brownie (A. A. Brown, contact man) to take the batteries as Ad and I went forward to the pyre for close-ups. As we hurried forward dodging through men running hither and thither I still thought I was dreaming. All around the blazing mass we moved, the three of us. We must have made ten set-ups before Brownie called a halt and said we had better begin thinking of getting our film on the way to New York.

"When they come to," he said, "they may confiscate our film. It has happened before on stories of this kind."

We then recalled Larry Kennedy and his assistant, Deon DeTitta, from our company, who were with us on the assignment getting a different angle. The last we had seen of them they were directly under the tail of the ship. We started looking for them. From one cameraman to another we ran. Finally we found them. Like us they had been moving around the ship making every possible angle. They had been saved by a gust of wind that came up as the



Al Gold, veteran Movietone News cameraman, who photographed the Hindenburg disaster and here recounts the experiences of the news-reel man on scene.

ship settled. It blew it over their heads and it landed about fifty feet from where they were standing. They had gotten many of the marvelous shots you saw on the screen in the Movietone News special. I was the only man given screen credit but many of the great shots in our release were photographed by Kennedy.

Giving the magazines with the exposed footage to Brownie and DeTitta, we started to get more scenes while they changed the negative to cans in a changing bag I always carry in my car. Brownie then hunted up our customs broker, A. F. Cofad, who was down at Lakehurst to clear some packages for 20th Century-Fox. He found him and sent him New Yorkward with our negative. We kept right on shooting everything we could get enough light on. We made another shipment that night using DeTitta as our messenger. Of course, when the fire died down there wasn't much you could get around the wreck. We then had to think about survivors and statements "of cause" from officials. We spent the rest of the night chasing these until relief came in the shape of other cameramen who had been dispatched to the scene by the editors. They came from New York and as far off as Washington.

We've had many nice things said to us about our pictures. It was great that we got them. But all cameramen will understand me when I ask:

"What would have happened if we had missed the picture?"

I'm a grandpappy and I've been shooting news for more years than look good in print and there isn't any kind of a story that I haven't ground on, but in spite of all the bouquets, I never want another experience like that at Lakehurst on that fateful night.

Among ourselves—the newsreel cam-



Sheedy—Copyright N. Y. Sunday Mirror.

Photographic history was made when this front cover color news picture of the Hindenburg disaster was featured by the N. Y. Sunday Mirror.

eramen—we almost fought in sheer relief. We kept telling each other "You've got it all. I haven't a thing." We did this until there was hysterical bitterness among us.

I couldn't think of sleep until I got a report from the office that everything was okay. For, between us photographers, I honestly didn't know what I had. But that's a secret. Don't tell the hoi-polloi or our editors.

I think, however, our new general manager, Edmund Reek, who used to be a newsreel photographer himself, had a sneaky suspicion of my plight. At 1 A.M., immediately after screening our negative, the first thing he did was to call Kennedy and myself and assure us that everything was hunky-dory.

And that was a relief, let me tell you.

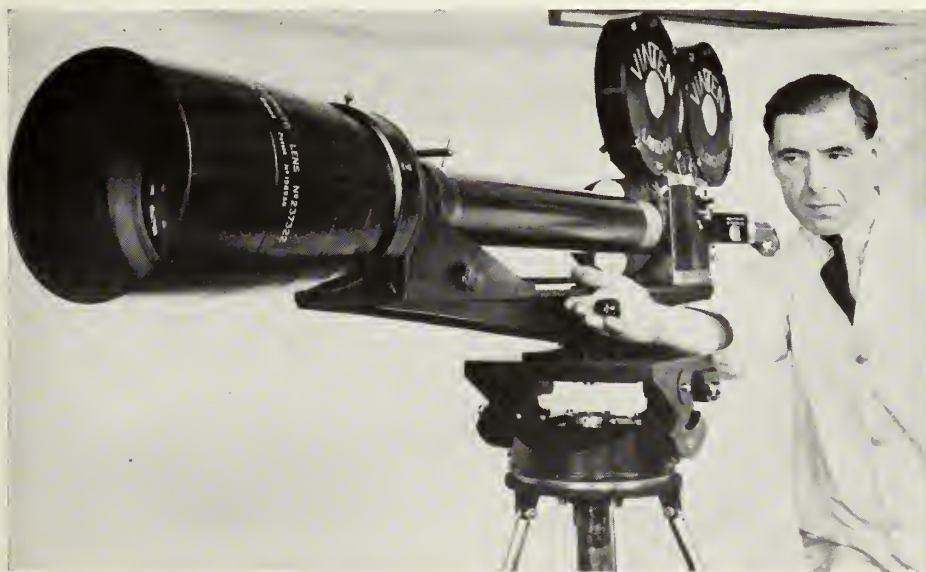
Color News Pix Hit

N.Y. Mirror Front Pages Zep Blaze Color Shots

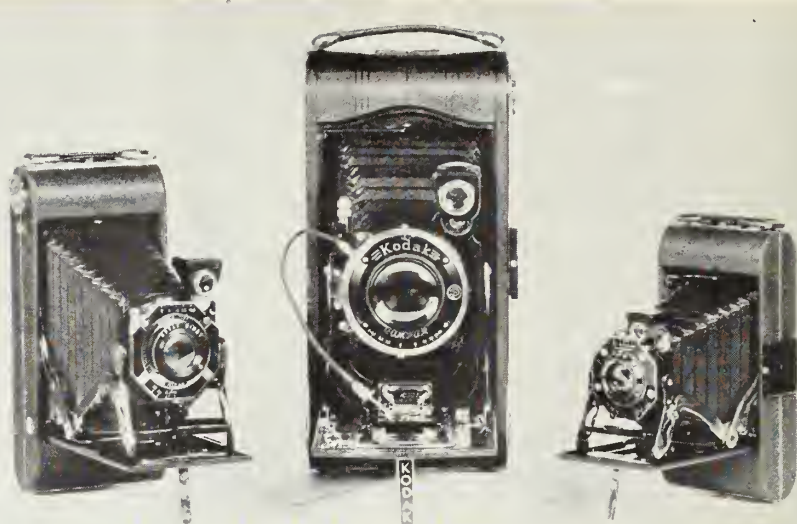
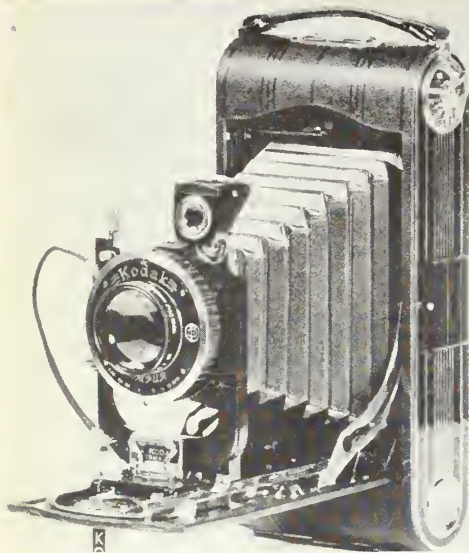
Natural-color news photography hit "the front page" last month with the appearance of color shots of the Hindenburg disaster in the New York *Sunday Mirror* magazine section, May 23rd, believed to be the first published color photographs of any major news event.

Made by Gerard Sheedy, of the *Mirror* camera staff, as the Zeppelin sank to the ground, pictures on two inside pages and the front and back covers reproduced the multi-colored flames from the burning dirigible. Sheedy made his pictures with a miniature camera on regular Kodachrome film. Of his 15 "shots," seven appeared in the *Mirror*, the remaining eight being omitted because they duplicated the subject matter of the pictures reproduced.

Sheedy, a 220-pounder, was knocked flat by the force of the explosion, the *Mirror* said in text accompanying the pictures. "Sheedy was forced to run for his life—but not before he had recovered his camera, which the blast had blown from his hand. The colorphotos were flown to Rochester, N. Y., for developing and processing at the plant of the Eastman Kodak Company, and flown back to New York. Each of the colorphotos reproduced was an enlargement from an original less than one by one-and-a-half inches, including the colorphoto reproduced on the front and back covers—an enlargement of more than 225 times!



BIGGEST CAMERA LENS, above, is 58' Telephoto F8, manufactured by Taylor, Taylor and Hobson, Ltd., of Leicester, England, for the firm of W. Vinten, Ltd., specialists in camera apparatus, and used to photograph Coronation for Pathe Gazette.



First photographic flashes of the new Eastman Kodak models, just announced. Above, the 3A Kodak, Series II. In panel, reading from Left to Right: The new Series Six-20 Junior Model; another view of the 3A Kodak, which is equipped with

Kodak Anastigmat F.4.5 lens; a shot of the Six-16 Junior, companion to the Six-20. Both the Junior series are equipped with F.6.3 lenses and come in six different models. The new series Juniors are quite moderately priced.

New Kodak Models

Eastman Announces New 3A Kodak, Six Juniors

A new version of an old favorite among amateur photographers, the 3A Kodak, Series II, has just been placed on the market by the Eastman Kodak Company, while a series of Eastman Juniors, moderately priced cameras in six models, designed as Series II, will soon make its appearance.

The new 3A Kodak, Series II, is equipped with a Kodak Anastigmat f.4.5 lens, taking postcard size pictures, $3\frac{1}{4} \times 5\frac{1}{2}$. Only a year ago the 3A Kodak, Series II, with Kodak Anastigmat f.6.3 lens was announced. The new model, besides the faster lens, has a Compur shutter, with built-in self timer. In addition to the eight speeds from one second to $1/200$ second, plus time and bulb actions, all marked on the knurled collar of the shutter, exposures of intermediate speeds can be made.

It is equipped with a rising front, useful in cutting out undesirable foreground and especially helpful when it is necessary to include the upper portion of buildings in vertical pictures.

Modern in appearance and up-to-date in design, the new 3A Kodak, Series II, has a tooled, black morocco-grain, genuine leather covering, and side panels finished in bright chromium and black enamel. Its retail price is \$75.

The new Junior Kodaks come in two sizes: Six-16 ($2\frac{1}{4} \times 3\frac{1}{4}$) and Six-20 ($2\frac{1}{4} \times 3\frac{1}{4}$), each size with three different lens equipments, single, Kodak Bimat and Kodak Anastigmat f.6.3.

The Six-16 and Six-20 with f.6.3 lenses have Kodex and Kodon shutters respectively, each with time and bulb action and shutter speeds ranging from $1/25$ to $1/100$ second. Focusing is done by revolving the lens mount.

Those with Kodak Bimat lenses, which are in focus mounts and equipped with Kodon shutters, also have shutter speeds from $1/25$ to $1/100$ second, with time and bulb action.

The single lens Juniors have good-quality fixed focus lenses, the Six-16 with a Kodak shutter and the Six-20 with a Kodon shutter. Both can be set for instantaneous snap-shots and time exposures. The price range is from \$9.25 for the Six-20 with single lens to \$15.75 for the Six-16 with Kodak Anastigmat f.6.3 lens.

Three lens equipments—Kodak Anastigmat f.6.3, Kodak Bimat lens, and single lens—in each of two picture sizes:

Six-16, $2\frac{1}{2} \times 4\frac{1}{4}$ inches; and Six-20, $2\frac{1}{4} \times 3\frac{1}{4}$ inches. Load with 8-exposure roll film: the Six-16's taking regular N.C., 616; Verichrome, V616; "SS" Panchromatic, SS616; and Panatomic, F616; the Six-20's taking regular N.C., 620; Verichrome, V620; "SS" Panchromatic, SS620; and Panatomic, F620.

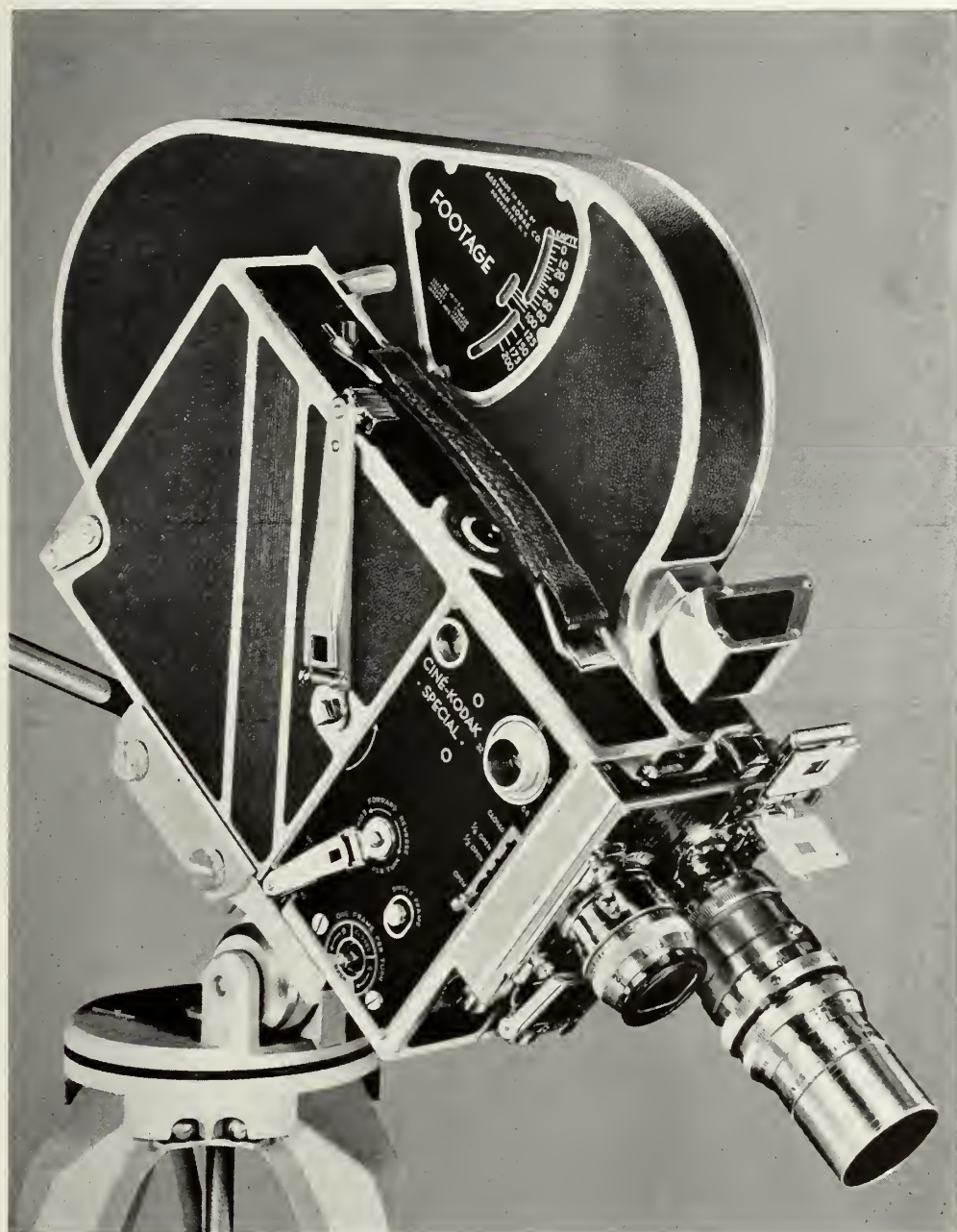
All Junior models have black morocco pin-grain material covering, buffed nickel-finish metal parts, regular brilliant reflecting waist-level finders, and open-frame direct-view eye-level finders.

A push-button bed latch releases the bed, which must be pulled down to picture-taking position. Light pressure



Tanner.

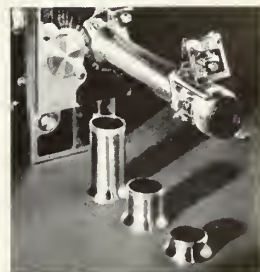
INVENTIVE Karl Freund is shown with a special lens-correcting machine he has developed, consisting of a series of whirling filters, which can actually change people's complexions on the film. Freund also has a special diffusion filter, consisting of a series of transparent membranes housed in a lens-barrel between compound lenses which gives close-ups effect of oil painting.



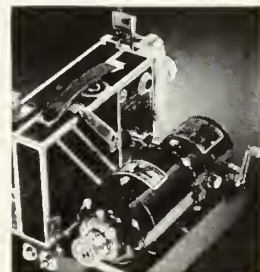
Eastman's Finest 16 mm. Movie Camera **CINÉ-KODAK SPECIAL**

FROM the standpoints of ability and performance, the Special is unquestionably the most remarkable 16 mm. camera ever produced.

The basic model of Ciné-Kodak Special offers unique and exclusive refinements such as adjustable opening shutter, camera speeds from 8 to 64 frames per second, a reflex finder permitting ground glass focusing, interchangeable 100- and 200-foot film chambers, one- and eight-frame hand cranks for forward or reverse film winding, single frame release, individual foot meter, single frame counter, double lens turret, mask slot between lens and film. Fades, dissolves, double and multiple exposures, mask shots, slow motion analysis, animation—all these advanced effects are easy with this basic model. Wide though its range, even greater versatility is made possible by eight interchangeable lenses, ranging from wide angle to 6-inch telephoto, and accessories such as those shown at the right. A free booklet tells the complete story. Eastman Kodak Company, Rochester, N. Y.



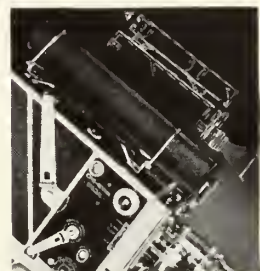
With the Lens Extension Tube Outfit lens fields may be narrowed to .047 of an inch in width.



The Electric Motor Drives permit automatic or remote control for the making of many advanced effects.



The Electric Release Control Outfit permits intermittent exposures by electrical or remote control.



The Reflex Finder Image Magnifier reproduces an enlarged Reflex Finder image.



The Optical Finder corrects parallax, shows the field, at all distances, of all focal length lenses.



Composer....



Dimitri Tiomkin goes to work to score Universal spectacular production of "The Road Back," in an unusual arrangement for the various musical instruments, which will be recorded

to aim for a "stereoscopic" effect. 1. Tiomkin studies the story. 2. Composer-arranger experiments at piano, testing musical thoughts. 3. Working over the ideas after they are

on the new. bar bed release permits easy closing from picture-taking position. Other features common to all models: hinged back with sliding latch, swing-out, hinged film supply bracket, film pressure pad carefully designed to maintain uniform film register, swing cover for ruby film window, tripod sockets to hold camera in vertical or horizontal position.

DuPont Type 300

New Superior 16 mm Pan To Get Special Service

New DuPont Type 300 Superior 16 mm Panchromatic film will be marketed on a sales plan with the processing charge and print cost included in

the purchase price of the film. The new smaller size film has speed, latitude, grain and color balance identical with the popular 25 mm Panchromatic now in wide use in Hollywood productions.

Amateurs will get in the new film many of the advantages the professional photographer has enjoyed by giving them equivalent raw stock and negative and print methods which are used on professional motion picture work. For the present the new type film will be sent by users to the DuPont company for processing in special fine grain developers, which keep the graininess down to a very satisfactory level, and insures clean, quality prints.

The new stock differs from ordinary 16 mm film in that it has a protective layer between the active emulsion and the celluloid which prevents halation,

and more important, insulates the active layer from any harmful action from the celluloid solvents which can cause loss of sensitivity or degradation of the latent image.

Its extreme speed permits working under adverse lighting conditions both interior and exterior; facilitates slow motion photography; and allows fully timed negatives to be obtained behind the dark red filters if extreme corrections are desired.

Regarding color balance, it has been chosen so as to give optimum results with and without makeup. Subjects shot under incandescent light without makeup will be found to have a very pleasing, clear flesh texture without sacrifice in modeling or excessive lightening of lips.

Contrast of the new film is set at a



Bojangles....

Master tapsichorean of vaudeville and motion pictures, Bill "Bojangles" Robinson, captured in a frenzy of Robinsonian



....goes to work

on paper. 4. Now the arrangements are checked carefully, using a stop-watch against the scene-by-scene chart of production. 5. Tiomkin and Musical Director Charles Previn get

together on orchestral treatment. 6. Composer makes a final careful checkup of the completed score before recording.

Freulich

level which gives the greatest latitude. Subject material with deep shadows and bright highlights will be reproduced without shadow detail blocked or highlights chalked up through loss of detail.

Advantages of the special negative and print method are: (a) Provided opportunity in printing to correct for minor errors in original exposure of negative; (b) Greater exposure latitude. The negative-positive system will handle a much greater departure from correct exposure than the reversal system. With the latter, gross over-exposure leaves insufficient silver halide to produce a satisfactory positive. In the negative and print method, the positive has its full quota of emulsion and all that is necessary is to provide sufficient printing

light to get through the negative: (c) The negative serves as a permanent record and is not subjected to the hazards of projection; (d) As many copies can be made as desired, all of which will be of finest quality.

Exposure information for the Superior Pan can be obtained from speed tables provided by manufacturers of exposure meters and from guides commonly in use.

Filter factors for the most commonly used Wratten filters are as follows:

Aero 1	1.7
Aero 2	2.7
21	3.2
23A	4.0
25A	6.5
29F	10.0

"Still of the Month"

Because of the problems involved in getting the special SMPE Spring Convention Number to press a week ahead of the *International Photographer's* normal deadline, the monthly "Best Still" selections have been left out of the June issue. They will resume as a regular feature with the July issue. Studio stillmen are reminded that any photographer assigned to a production may submit three pictures from any single unit assignment; likewise, commercial photographers on bona fide paid assignments may submit three pictures from each assignment. Deadline for July stills is June 15. Pictures should be accompanied by full credits.



....goes to town

Gold

rhythm by Milton Gold, Local 659, in scenes from a 20th Century-Fox fimusical production.

The Cameraman

The Producer

The Director

The Star

Whenever they say **"CAMERA"**—
They think of **"MITCHELL"**

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Motion Picture Camera Supply Co., New York City
 Bombay Radio Co., Ltd., Bombay, India
 H. Nassibian, Cairo, Egypt

Kodak Pola-Screens

Eastman Pola-screens now are available for use on amateur still and motion picture cameras. For still cameras, the Pola-screens Type 1A come in four sizes, designated as Series V, VI, VII and VIII. For each size a range of adapter rings is available with which the Pola-screen can be fitted to the lens mount of practically any camera. Separate lens hoods also are available.

As is now well-known, pictures can be taken with a Kodak Pola-screen obliquely through glass or water so that the details beyond are clearly visible without objectionable surface reflections, and surfaces (metal surfaces excepted) can be photographed obliquely so that reflections interfering with renditions of surface detail or with good composition, can be subdued. The blue sky, in pictures made at right angles to the sun's rays, can be recorded in any shade from light to quite dark gray in black-and-white, while for pictures in full color with Kodachrome, subjects can be made to stand out strikingly against a dark blue sky. This method of darkening the sky is the only one possible in color photography.

Agfa Pan for Argus

Agfa-Ansco now has a new film spool prepared especially for the Argus miniature camera on the market. The new item, an 18-exposure film furnished on a special daylight-loading spool to fit the Argus Camera, uses fast Agfa Superpan emulsion. Superpan has been selected by its makers from many types available as most ideal material for photography with the Argus, because of its combination of high speed, full color sensitivity, and fine grain. The 18-exposure Superpan spool sells for 50 cents.

B & H's Eyemo

Hand Camera Continues to Maintain Its Popularity

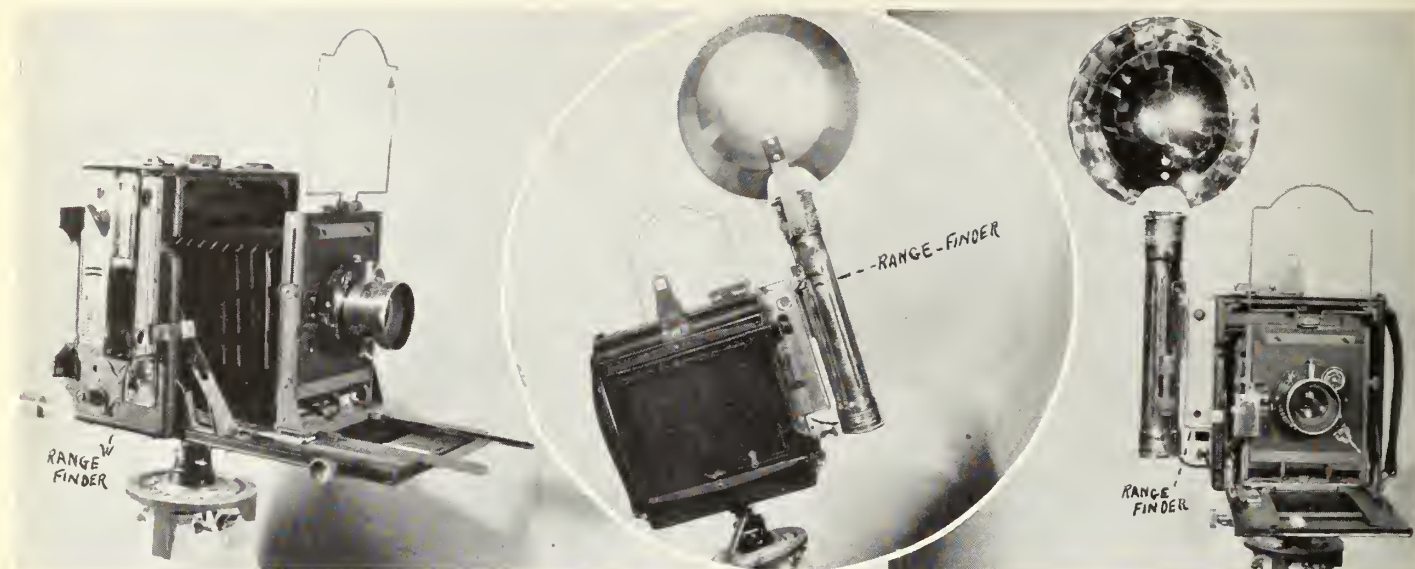
Bell & Howell's familiar Eyemo continues to hold its position as an outstandingly popular camera for wide variety of work. This is particularly due to the company's policy of keeping up with modern demands by making new engineering modifications and developing practical attachments and accessories.

The new improved Eyemo now comes in a series of seven models. All emphasize the Eyemo features of great portability and ease of operation, when pictures of theatre reproduction quality must be obtained under adverse conditions. These features are responsible for the camera's great use for news-reel shots, particularly when a hand camera is the only instrument that can be used.

THE ANSWER

EASTMAN'S coöperation with the industry has helped to solve many a problem of motion picture technique. Now it supplies a complete answer to the important duplicating problem. Eastman Fine-Grain Duplicating Positive and Negative Films are capable of producing duplicates actually indistinguishable from originals. Eastman Kodak Co., Rochester, N. Y. (J. E. Brulatour, Inc., Distributors, Fort Lee, Chicago, Hollywood.)

EASTMAN *Fine-Grain*
DUPLICATING FILMS



CANDID GRAPHIC. Milton Gold, Local 659, believes he has solved his focusing problems completely with addition of the new Kalart Range Finder to his Eastman Speed Graphic, making it "candid camera that defies competition." Right: The

Gold. Range Finder attached to the camera; left, the Range Finder used in conjunction with the Mendelson Speed Gun. Center, rear view, showing how Range Finder is protected by band of strap chromium, which also is used to hold the Speed Gun.

The CINEMATOGRAPHER'S BOOK of TABLES

By Fred Westerberg

Cameramen Should Add These to Their Red Books

TIME CONVERTED TO FEET OF FILM 35mm. FILM FOR CAMERA SPEEDS BELOW NORMAL

Running Time in Seconds	CAMERA SPEED IN PICTURES PER SECOND							
	24 (1x)	20 (5/6x)	16 (2/3x)	12 (1/2x)	8 (1/3x)	6 (1/4x)	4 (1/6x)	3 (1/8x)
5	7.5	6.3	5	3.8	2.5	1.9	1.3	1.0
10	15.0	12.5	10	7.5	5.0	3.8	2.5	1.9
15	22.5	18.8	15	11.3	7.5	5.6	3.3	2.8
20	30.0	25.0	20	15.0	10.0	7.5	5.0	3.8
25	37.5	31.3	25	18.8	12.5	9.3	6.3	4.7
30	45.0	37.5	30	22.5	15.0	11.3	7.5	5.6
35	52.5	43.8	35	26.3	17.5	13.1	8.8	6.5
40	60.0	50.0	40	30.0	20.0	15.0	10.0	7.5
45	67.5	56.3	45	33.8	22.5	16.9	11.3	8.4
50	75.0	62.5	50	37.5	25.0	18.8	12.5	9.4
55	82.5	68.8	55	41.3	27.5	20.6	13.8	10.3
60	90.0	75.0	60	45.0	30.0	22.5	15.0	11.3

FOR CAMERA SPEEDS ABOVE NORMAL

Running Time in Seconds	CAMERA SPEED IN PICTURES PER SECOND							
	24 (1x)	36 (1 1/2x)	48 (2x)	72 (3x)	96 (4x)	120 (5x)	144 (6x)	192 (8x)
5	7.5	11.3	15	22.5	30	37.5	45	60
10	15.0	22.5	30	45.0	60	75.0	90	120
15	22.5	33.8	45	67.5	90	112.5	135	180
20	30.0	45.0	60	90.0	120	150.0	180	240
25	37.5	56.3	75	112.5	150	187.5	225	300
30	45.0	67.5	90	135.0	180	225.0	270	360
35	52.5	78.8	105	157.5	210	262.5	315	420
40	60.0	90.0	120	180.0	240	300.0	360	480
45	67.5	101.3	135	202.5	270	337.5	405	540
50	75.0	112.5	150	225.0	300	375.0	450	600
55	82.5	123.8	165	247.5	330	412.5	495	660
60	90.0	135.0	180	270.0	360	450	540	720

SENSITOMETRY

Density Range Converted to Opacity Range

Opacity Range	1—105	1—110	1—115	1—120	1—125	1—131	1—138	1—145	1—151	1—158	1—166	1—174	1—182	1—191	1—200	1—209	1—218	1—229	1—240	1—251	1—263	1—275	1—288	1—302	1—316
Density Range	2.02	2.04	2.06	2.08	2.10	2.12	2.14	2.16	2.18	2.20	2.22	2.24	2.26	2.28	2.30	2.32	2.34	2.36	2.38	2.40	2.42	2.44	2.46	2.48	2.50

Opacity Range	1—33.1	1—34.7	1—36.3	1—38.0	1—39.8	1—41.7	1—43.7	1—45.7	1—47.9	1—50.1	1—52.5	1—55.0	1—57.6	1—60.3	1—63.1	1—66.1	1—69.2	1—72.5	1—75.9	1—79.4	1—83.2	1—87.1	1—91.2	1—95.5	1—100.0
Density Range	1.52	1.54	1.56	1.58	1.60	1.62	1.64	1.66	1.68	1.70	1.72	1.74	1.76	1.78	1.80	1.82	1.84	1.86	1.88	1.90	1.92	1.94	1.96	1.98	2.00

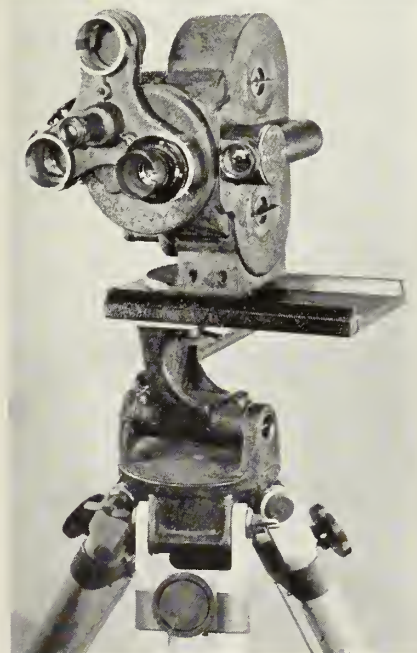
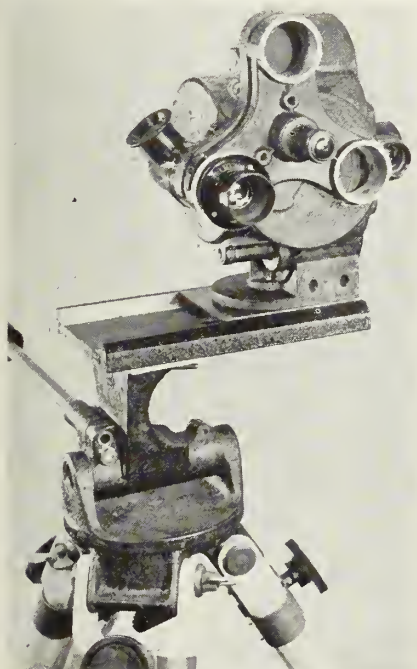
Opacity Range	1—10.5	1—11.0	1—11.5	1—12.0	1—12.5	1—13.1	1—13.8	1—14.5	1—15.1	1—15.8	1—16.6	1—17.4	1—18.2	1—19.1	1—20.0	1—20.9	1—21.8	1—22.9	1—24.0	1—25.1	1—26.3	1—27.5	1—28.8	1—30.2	1—31.6
Density Range	1.02	1.04	1.06	1.08	1.10	1.12	1.14	1.16	1.18	1.20	1.22	1.24	1.26	1.28	1.30	1.32	1.34	1.36	1.38	1.40	1.42	1.44	1.46	1.48	1.50

Opacity Range	1—3.31	1—3.47	1—3.63	1—3.80	1—3.98	1—4.17	1—4.37	1—4.57	1—4.79	1—5.01	1—5.25	1—5.50	1—5.76	1—6.03	1—6.31	1—6.61	1—6.92	1—7.25	1—7.59	1—7.94	1—8.32	1—8.71	1—9.12	1—9.55	1—10.00
Density Range	.52	.54	.56	.58	.60	.62	.64	.66	.68	.70	.72	.74	.76	.78	.80	.82	.84	.86	.88	.90	.92	.94	.96	.98	1.00

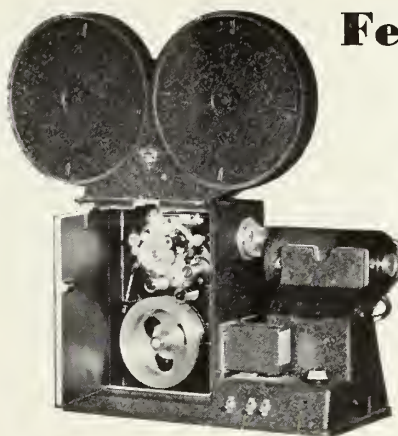
Opacity Range	1—1.05	1—1.10	1—1.15	1—1.20	1—1.25	1—1.31	1—1.38	1—1.45	1—1.51	1—1.58	1—1.66	1—1.74	1—1.82	1—1.91	1—2.00	1—2.09	1—2.18	1—2.29	1—2.40	1—2.51	1—2.63	1—2.75	1—2.88	1—3.02	1—3.16
Density Range	.02	.04	.06	.08	.10	.12	.14	.16	.18	.20	.22	.24	.26	.28	.30	.32	.34	.36	.38	.40	.42	.44	.46	.48	.50

Rapidity with which lenses can be interchanged, ease of threading also are important elements in the camera's popularity.

Among the Eyemo accessories the alignment gauge, available for the "N," "O," "P" and "Q" models, is especially valuable for many purposes. The setup, illustrated herewith, permits accurate alignment of close subjects through a prismatic focusing magnifier. The camera then can be shifted on the



Bell and Howell's improved Eyemo camera, mounted on the B&H heavy duty Eyemo Tripod. Top, the camera is set on the alignment gauge in focusing position with the lens in front of the prismatic focusing device. Bottom, camera in the photographic position, with the lens swung in front of the photographic aperture and the camera swung over so that the lens in bottom picture is in exactly the same position as it was during the focusing operation in top illustration.



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Eastman Price Drop

Eastman Kodak Company announces reduction in the price of Kodachrome Film for miniature cameras. Kodachrome Film No. K135, and No. K135A for Photoflood lighting, both 18 exposures, for Kodiak Retina and similar 35 mm. miniature cameras, is reduced from \$3.50 to \$2.50, including processing. Kodachrome Film No. K828, and No. K828A for Photoflood lighting, both eight exposures, for Kodak Bantam Special, is reduced from \$1.75 to \$1.35, including processing.

Agfa-Charney Building

Agfa Ansco Corporation has broken ground for construction of a new two-story office and storage building at the corner of Cole Avenue and Santa Monica Boulevard, Hollywood. The structure will include a large film storage warehouse, offices for coast headquarters of Agfa Ansco Corporation and C. King Charney, Inc., and large quarters for research laboratories. General offices of Agfa Ansco Corporation, research department and storage warehouse will be on the ground floor. The second floor will be used for offices of C. King Charney, Inc., exclusive distributors of Agfa motion picture film in the United States.

Camera Supply Building

Ruddy Geraus, Manager, Camera Supply Company, announces that they have purchased the building at 1515 Cahuenga Blvd., where they have been established for over three years. Improvements and alterations will soon be in progress to take care of their increasing business.



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LENS GAG. Contrary to appearances this unique shot of Bert Longworth, Warners' photographer, is not the work of Otto Phocus, *International Photographer's* occasional contributor on "What Not to Do When You Get a Camera in Your Hand."

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Color Make-Up

New Factor Development Solves Color Problem

Revolutionary changes affecting the lives, habits, and customs of people throughout the world each year have been traced directly to the influence of motion pictures.

In line with this vein of thought, there comes word that the Max Factor studio organization is set to introduce a new make-up technique which will in all probability have a far-reaching and revolutionary effect, both on the stars of the screen and the average woman.

The likelihood of this revolutionary change actually taking place is heightened and made more imminent by the startling results obtained on the faces of all the players in Walter Wanger's new color-film, "Vogues of 1938."

Like most successful innovations, this one was born of necessity. One of the most difficult problems ever encountered by films is color, such as "Becky Sharp," "Dancing Pirates," "Ramona," "The Garden of Allah," and even "A Star Is Born," has been make-up for the actors—make-ups which would not result in apparently jaundiced skins being projected on theatre screens.

And the Factor company, which finally solved the perplexing problem, had to conduct experimental researches in its laboratory for more than six years before success was achieved.

The result is that for the first time in the history of Hollywood, motion picture players do not offer an obvious appearance of wearing make-up as they work. Of interesting note in connection with this was the observation of one Hollywood newspaper correspondent who, while visiting the "Vogues"

set, thought Joan Bennett and Warner Baxter were but visitors on the stage until they actually went into a scene—their make-ups were that natural in appearance.

The natural flesh tones of each member of the picture's cast can be clearly seen through the make-up, both on and off the screen, and yet they are completely made up for the exacting lenses and filters of the color cameras.

According to Max Factor, the real essence of the effectiveness of the new make-up lies in this transparency. Its chief function is to accentuate the natural coloring of the actor's own complexion, rather than to add the heretofore mask-like greasypaint foundation. This latter method of make-up application has for years been a great drawback to the successful achievement of films in color because of the unfavorable reaction of color camera filters to the greasypaint surfaces.

After observing the results of Max Factor's new technique in color make-up, the observers are almost unanimous in their declarations that the new creation will prove a boon to everyone connected with its use, from star to make-up artist, to cameraman.

A point particularly stressed by the studio artists who have used it is that where the old-fashioned screen make-up required anywhere from forty-five minutes to two hours, the new product allows even a star, subject to the most minute close-up scrutiny of the camera, to be made-up completely in fifteen minutes.

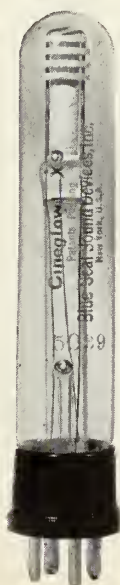
Even the studio electricians are definitely in favor of the new Factor creation: fewer lights and more simple arrangements of them are possible for players using it.

Definite indication that the new make-up will start another era in cosmetics was brought to light when it was discovered that the twelve New York models appearing in "Vogues of 1938" were all wearing the studio make-up after working hours, for their evening social appearances.

Tests of the make-up on outside locations indicate that it has removed one of the cameraman's greatest irritations—that afforded by the sun when it melts and demolishes greasypaint make-up and causes necessary delays to camera work while faces are being made over.

The result of all of these experiences and observations of the new product is that Hollywood's stars, featured players and extras, as well as the photographers who are aware of its value in the production of excellent film work, are all clamoring for supplies of it.

So far, however, the clamor has been in vain. The new make-up is now being produced at the Max Factor laboratories only in small quantities, and all of the present output is being used in the Walter Wanger production.



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Sound

"Preview" Moviola • U's Sound • Silent Posies

"Preview" Moviola Ready for Use

New Model Can Switch from Viewing Magnifier to Enlarged Image; Has Many Aids for Film Editor

A new aid to film editors is to be shown at the Convention of the Society of Motion Picture Engineers by Iwan Serrurier, "the Moviola man," whose film editing equipment is used in every Hollywood studio and in most of those abroad. Called the "Preview Moviola," it adds to the familiar Moviola features the advantage of projecting an enlarged image of the picture being viewed upon a $5\frac{1}{4} \times 6\frac{1}{2}$ inch screen located beside the regular viewing magnifier.

In appearance the new model is much like conventional Moviolas. It consists of two flexibly coupled film-moving heads, one for picture and composite sound-track, the second a sound-head only, for separate sound-track. The two units may be used together or independently, as each has its own driving-motor, either one of which may be used alone to drive both units.

These two heads, together with a loud-speaker unit, are mounted on a caster-equipped metal stand, beneath which is mounted the AC-operated amplifying

unit for both sound pick-ups.

Extending rearward at an angle beneath this stand is the cast aluminum shadow-box through which the picture is projected. The ground glass viewing screen on which the picture is seen is mounted at the upper end of this shadow-box, beside the regular Moviola picture-viewing head. The screen is shaded from room light by a deep, cast aluminum shield.

Projection is effected by a standard 50-cp. automobile headlight bulb of the same type as an exciter-lamp in the sound pick-ups. This is mounted in an enclosed lamp-house which swings into place above the regular viewing-lens, which then serves as a condenser. Beneath this an objective lens projects the image of the picture downward onto a spherical mirror, from which it is reflected upward again to the ground glass screen. This image is seen right-side-up, and is correct as to left and right.

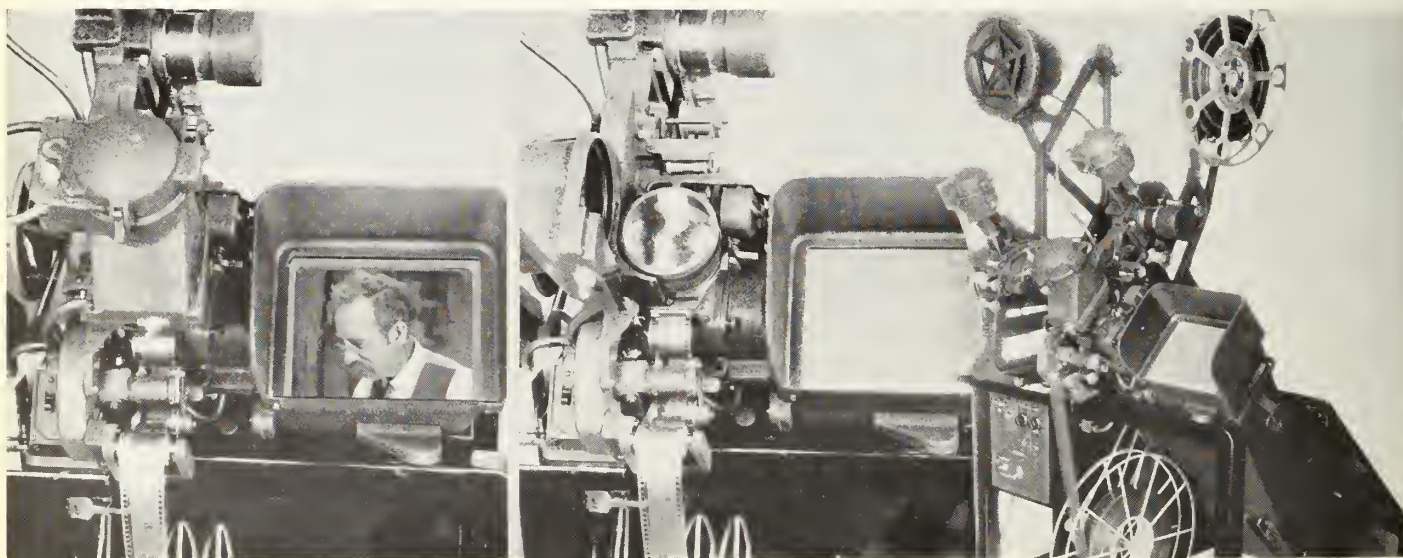
In addition to the conventional Moviola

ola framing movement, a level placed conveniently to the right of the shadow-box moves this mirror, and "frames" the picture. A smaller level mounted beneath the shadow-box provides a lateral adjustment of the projected image should this be necessary.

Unlike conventional Moviolas, the "Preview" model is equipped with a shutter. This is of the barrel type, and is mounted just below the film-carrying mechanism. This type of shutter, as is well known, is regarded as the most efficient type for projection use, as it permits the maximum aperture and gives a clean, uniform cut-off. It is possible with the "Preview" Moviola to project without the use of the shutter, which may be easily disconnected. When used without the shutter, there is no flicker when running the film at very low speeds. The shutter may be disconnected and re-connected by manipulating an easily accessible control. It is impossible to re-connect the shutter out of time with the film movement.

When it is desired to use the "Preview" Moviola as a conventional film-viewer, without the projecting feature, it is only necessary to swing the projecting lamp-house to one side on its hinged mount. This pivoting action operates a mercury switch which turns off the projecting lamp and turns on the regular lamp by which the picture is viewed through the magnifying lens. The same action slides a matte-white reflecting blade into position diagonally below the film, and an opal glass diffuser into place directly beneath the film.

Used in this way, the new Moviola is used exactly like any other. The magnifying lens slides up and down to "frame" the picture. It swings completely out of the way to permit mark-



The new "Preview" Moviola. Left, Magnifier closed, automatically throws image over to project on screen $5\frac{1}{2} \times 6\frac{1}{2}$;

Center, operation of the Moviola with the regular viewing magnifier; Right, long shot view of new Moviola model.

New Sound Trucks

Studio recording equipment these days is undergoing many transformations and the portable sound trucks are not being left behind in the improvement campaign. Illustrated herewith are two modernistic Ford units in use at Warners-First National and 20th Century-Fox. Right, Warners' have a fleet of six new streamlined sound trucks. Below, E. H. Hanson, head of the 20th Century-Fox sound department; R. H. Townsend, his assistant, and C. W. Faulkner, chief transmission engineer at the studio, with one of the Westwood lot's sleek new motorized units.



ing any chosen frame with a grease-pencil.

Like all Moviolas, the new "Preview" model may be operated either forward or backward without damaging or re-threading the film. It runs either at a constant speed of 21 frames per second (90 feet per minute) when a fixed-speed switch is thrown, or at a lower speed, with the driving motor controlled by a hand or foot operated variable speed control. There are two foot-operated controls, one for each motor, permanently attached to the two front legs of the supporting stand. On the right is the variable-speed control, intended for precise study of action or sound. On the left is the fixed-speed control, intended for use when running relatively longer lengths of film through the machine. Both speed controls may be used either for projecting the enlarged image or for viewing through the ordinary magnifier.

Following familiar Moviola practice, double-acting feed and take-up spindles are mounted on both sound and picture head. These spindles are now

built to take the new standard 2,000-foot reels, and will serve as take-ups in either direction.

It is also possible to run short lengths of film through the machine without using reels. The usual non-scratching film channels are provided for this. Inclined back of the machine serves as an excellent runway for the film when it is desired to feed it into a basket on the floor. There is an obvious advantage in thus being able to run a single loose scene through the machine, viewing it on the large ground glass screen, and instantly changing to the ordinary magnifying viewer-lens for close matching of lip-improvements or action.

Other Moviola improvements introduced during the past year will also be exhibited by Serrurier. Among them will be special Moviolas equipped for "push-pull" sound-track reproduction; an ingenious, instant acting electric brake for accurate stopping in precision cutting, silent and sound Moviolas for editing 16mm. film, and multiple-film synchronizers and rewinds.

U's Recording

Latest ERPI Equipment, New Mobile Mike Boom

Universal, long at a disadvantage with respect to its re-recording machinery, now has one of the finest re-recording machine rooms in the industry, as one result of the expansion and improvement program being carried out on the lot. The new re-recording layout features 11 of the latest type ERPI reproducers, employing the Kinetic scanning principle and two of the still more elaborate "Q" type re-recording machines.

Universal also has adopted a very light and mobile microphone boom, which works something like a pair of lazy tongs and has been dubbed "the grasshopper boom" by the sound crew. The boom weighs less than one hundred pounds complete, yet has a range of five feet and a total reach of sixteen feet. It can be worked in around lamps, cameras, etc., with the greatest ease. When fully equipped with these new style booms, Universal engineers expect that the old-style booms will only be required for about 30 per cent of the setups.

Silenced Posies

Studio Burbank Quiets Rustling Flower Petals

We now have the noiseless flower so that the movies have at last taken the traditional "rustle" out of spring. There are odorless blooms and "colorless" blossoms, but it remained for a "Hollywood's Burbank" to develop one that would not rustle when used in a motion picture scene. Even though the human ear does not "pick up" the noise of a flower as its petals scrape the leaves, the more sensitive microphone does. No sound seems

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faint enough to escape its delicate tuning. Many a "take" has had to be re-shot when all else was okay except the sound made by flowers. And believe it or not, technicians and actors, too, began to shudder every time the script called for a scene with a bouquet.

J. M. Redman, studio florist at Metro-Goldwyn-Mayer, is the man who solved the problem. He has found that by dipping flowers into a special preparation he can make them absolutely silent. Even vigorous shaking will create no rustle to worry the sound man.

"Exhaustive tests have shown," says Redman, "that the only time these flowers will make a sound is when they are thrown at someone while still in the vase."

ERPI'S Building

Construction is now under way on the new ERPI Hollywood plant at Seward and Romaine Streets. Expected to cost around \$250,000, the new structure will be a two-story building. ERPI's divisional general offices, review rooms and laboratory, large warehouse and garages will be housed under one roof when the building is completed last this summer.

Push-Pull Checkup

E. H. Hansen, chairman of the Academy Research Council Sound Re-



Jeanette MacDonald with silenced posies used at MGM for sound recording scenes.

cording Committee, has appointed Gerald Best, J. G. Frayne, Wesley Miller, S. J. Twining and Wallace Wolfe to a subcommittee to investigate suggested revisions in sound track dimensions and placements on the film in connection with the use of the push-pull method in recording and reproduction.

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Lighting-Sets

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"Wrap 'Em Up!" That order rings out on a sound stage, and the day's work has ended for two score electricians. They put their equipment in order and start for home. Sounds like a simple ending to a day's work. But on that sound stage for the preceding ten hours of "shooting," that staccato command would have been just one more order to further confuse the ordinary visitor to any Hollywood studio. Set lighting electricians, or "operators," as they are classified, are in no small measure responsible for success of a picture. Their work is highly specialized and exacting. Their duties are performed in response to a queer jargon of orders from their boss, or "gaffer," and the very nature of their duties is confusing to an outsider.

IATSE Studio Technicians Local 37 uses around 2300 operators to supply the constant demands of Hollywood studios. Each a specialist, these operators have a thorough knowledge of their work, and competently cope with most difficult problems of lighting. One week an operator may work 60 feet in the air, high over a huge set, and the next week in the musty, dank bilge of an ocean-going tramp freighter off the shores of Southern California, or a few weeks later in far-away Alaska bundled in countless fur wraps and heavy mittens.

Every location, each rapidly changing setting, presents new and individual problems that the operator must instantly master. From comparative safety of a modern sound stage to handling cables and lamps in a real rainstorm, standing in water highly charged with electricity—no matter the situation—the operator is competent to "deliver the goods." No less than 30 different types of lamps are standard equipment of the modern film studio. All necessitate complete knowledge of electrical hook-ups, proper voltage, and a mustering of practical knowledge gained only by years of conscientious

effort in this specialized field. Volumes could be written on the circumstances peculiar to each set, each new picture, but to the layman, perhaps the jargon used by the operators is the most confusing and least understood of all.

Of the many types of lamps used, each has a different label. There are Grecos, Moles, deuces, fives, rifles, 24's, 36's, 18's, 70's, 120's, 150's, rotaries, babies, matchboxes, juniors, pans, scoops and many others. Other equipment is typed as screens, oils, spiders, four-naught, two-naught, whistle-boxes, snoots, barn-doors, etc.

Let's visit a modern sound stage and hear what goes on there. Stop a moment and look around you—ever see so many lights before, and nearly all different? Glance up above you. There's all of a hundred lamps up there, big ones, little ones, every type. The men busying themselves on those narrow platforms, or parallels, are the set lighting operators, preparing their equipment—testing every lamp, cleaning lenses, checking circuits. The operator is virtually a member of a highly competent fire prevention squad. One faulty hook-up, one short circuit, and this huge stage with its fortune in settings and equipment would be a terrifying bonfire. The operator solemnly understands his responsibilities. Several hundred actors are standing about. Some of them are talking with the electricians, both on the floor and "up high." The actors know the fire hazard that is always present, and their faith in the operator to guard the actor's life has never been violated. An insecure lamp up there on those parallels could crush out the lives of many actors—many tons of heavy lights hang directly over the actor's head—but securely fastening those huge lamps is just one of the automatic duties that the operator performs so well. The man by the camera—looking up high—that's the boss in charge of set lighting, called the gaffer. His assistant at his side is called the "best boy." These two men were selected from the many available through Local 37 to have complete charge of this production because of their ability. The gaffer



Bullock.

Never-ceasing vigilance is the obligation of the studio electrical operators of Local 37, IATSE. From high in the catwalks to kneeling to nurse a spot, operators must be constantly on the alert to protect not only photographic values but the lives of the people who work on the set under heavy lighting equipment. This article by a member of Local 37 is the first in a series outlining the work of the eight distinct branches of the organization, which is numerically the largest body of the International Alliance's West Coast Studio Locals.



Bullock.



Hendrickson.



Freulich.

Left, "Wrap 'Em Up" translated into action at the close of day as studio electricians fold up the huge lighting equipment. Center: the men who boss the set lighting are the "gaffer"

and the "best boy." S. H. Barton, right, is a gaffer at Radio, and George Neff, left, is best boy. Right, spectacular lighting for night scene in U's "Road Back."

checks his crew, finds them all in place and ready for his commands. His very attitude is one of confidence, confidence in his fellow members who stand ready and capable to assist him in this work. His only tools are a screwdriver and pliers, for the operator's complete knowledge of his work is his chief asset.

Two operators wheel a ponderous "sun-arc" into place, a floor lamp is changed, and the gaffer is ready to start. All must be in readiness before the director arrives for the first shot of the day. A "junior" is placed for a key light; is adjusted; and the lighting gets under way. Let's listen to the orders:

"Up high in Bay 12—hit that Greco—right it a little—heat it up—screen it! Bay 9—splash those three 18's across the floor—oil the center one a little—flood it! That 150 in the corner—hit it—pull in down across the door—put a snoot on it—cool it off! Bay 16—crack that 36 across the davenport—ease it off the window—cut into it on the right with a 70—put a barn door on it!—Bring that baby over here—O. K.—now wheel in a broad—put a silk on it—now bring me a rifle, that's it—now kill both of them!"

"Up high in the grid!—hook that 150 into a spider and put a whistle box on it—coal up that dead 120 and back-light the star—hit her hard!—Swing that 34 pan to the right—hit all your scoops—O. K. Kill 'em all and stand by!"

It doesn't sound very simple, nor was the lighting any simpler than it sounded. Each order was given with the sure knowledge of what results would be obtained. There is no guesswork in set lighting.

Like many another trade jargon, the special vocabulary of the studio operators has been patched together over a period of years. It is a form of verbal picturesque shorthand.

Now each operator carefully checks his lamps, lest they accidentally be

moved the slightest part of an inch. That alone could ruin a shot, and the lamps must not fail in the middle of a "take." The responsibility of each operator is definite and important, and he meets that responsibility with ability born of years of experience.



EXPERTS. Top, George Lee, MGM prop and his Pandora's box. A coming article will detail the work of propmen in Local 37. Bottom, R. C. Moore, 20th-Fox location chief, showing how the company files complete data and pictures on all kinds of location sites.

On location, the operators' duties increase. Entirely new situations and conditions demand that he must be both thoroughly competent and resourceful. A race-track, an African jungle, the desert, flood scenes, aboard a steamer, war scenes, a great fire picture being shot, and thousands of other location assignments burden the operator with complex problems, and he must be always ready at the proper time for shooting. One town has nothing but 220, another 440, this one 110. There are hook-up problems, laying cables through rivers, handling high intensity lamps in terrific rain storms—but the picture must not be delayed. The operator must be always ready.

Physical difficulties under which his myriad duties are performed are many. One day he handles a huge sun-arc high over a stage setting—the intense heat from hundreds of lamps making his precarious perch a dangerous one. The temperature often reaches 115 degrees and more, and he must be prepared for such rigorous tasks. A moment's relaxation, a slight fainting spell from the heat, a step on the treacherous rubber-covered cable, and he would go hurtling to the cement stage floor five stories below. Tomorrow his assignment may take him into a rainstorm to handle highly charged cables and lamps, and he must be prepared against electrocution. His keen appreciation of the dangerous work, plus a thorough knowledge of his art, lessens such a risk. These are but two of many life-risking assignments that may fall to him in his work.

One could write for hours and touch but a few of the dangerous, breath-taking episodes in the life of an operator. Yes, the 2,300 operators of I. A. Local 37 are well-equipped for their specialized endeavors, and are indeed an integral part of the technical division of the motion picture industry.

HANNA, Local 37, IATSE.

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Radio

CBS Engineering

New Coast Building to Have Latest Equipment

(L. H. Bowman, author of this article, is Western Division Engineer for the Columbia Broadcasting System. He and officials of CBS extend a cordial invitation to the Society of Motion Picture Engineers delegates to visit and inspect the present facilities of KNX, the Hollywood CBS station, and the transmitter at Van Nuys.—Ed.)

The new Columbia Broadcasting System studio building to be erected in Hollywood on Sunset Boulevard between Gower and El Centro Streets will be ready for occupancy late this fall. Practically all of the technical specifications have been completed and plans specify that the most modern and latest developments in radio engineering will be incorporated in our technical installation.

New CBS West Coast headquarters will be a five-story building which will include an auditorium with a seating capacity of 1,050 persons, two studios capable of seating several hundred persons and five smaller studios of various sizes. The Master Control room will be located on the main floor, will be glass-enclosed, and all work therein will be readily discernible from the main lobby.

The building, which will exceed \$1,000,000 in cost, will be entirely air-conditioned and will have available facilities for television and ultra high frequency work, together with a laboratory for carrying on experiments to further the art of radio.

Plans for the equipment installation have been completed and the apparatus will be of high fidelity calibre throughout, involving the latest innovations in speech input design and operation.

The over-all performance of each program channel will be capable of a frequency response characteristic within plus or minus one decibel of the 1000 cps value from 50 to 8000 cps and within plus or minus two decibels from 40 to 10,000 cps. This characteristic will be independent of mixer and master volume control settings and output levels up to plus 10 db (60 mw).

Harmonic distortion will be less than one-half of one per cent r.m.s. for any single fundamental frequency from 100

to 5000 cps for output levels up to plus 10 and will not exceed two per cent at an output level of plus 20 db (600 mw). The unweighted noise or hum level will be at least sixty db below signal level.

Adequate and extensive conduit and wiring is being installed to properly care for future developments if and when the occasion requires expansion of the existing facilities.

I have made no attempt to outline any of the operating features involved as space or time will not permit but, needless to state, the entire installation will consist of the most modern developments and trends of all audio research to date with several innovations as yet unused in American studios.

—L. H. BOWMAN.

Short Wave Survey

The Academy Research Committee on Short Wave Radio Communication, under the chairmanship of E. H. Hansen of 20th Century-Fox Studios, has

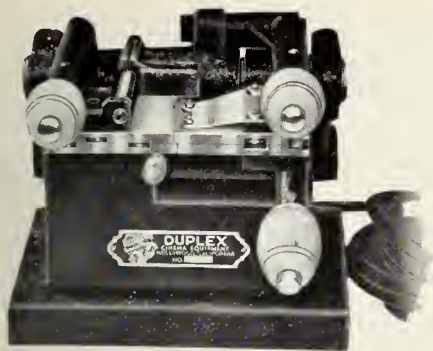


Dick Foran, WB's crooning horse opera star, who also foils with Gracie Allen on Grapenuts program over NBC net.

started a survey to determine amount of radio transmitting and receiving equipment owned by the major studios and extent to which radio is now used for short wave communication between the studio and location units. The committee will formulate plans for obtaining a maximum benefit from the use of radio communication between studios and units working on locations where there are no other means of communication available. This committee in addition to E. H. Hansen, consists of John Aalberg, Ellis Gray, Lorin Grignon, John Hilliard, Burton F. Miller, Gordon Sawyer, Stewart Wainwright and Gordon S. Mitchell, manager of the Research Council.



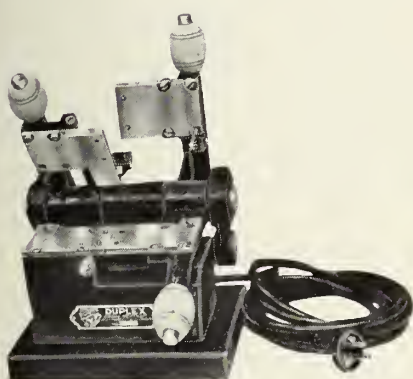
Charles Vanda, CBS program director; John M. Dolph, assistant to Donald Thornburgh, CBS's Coast Vice-President, Thornburgh; Gary Breckner, announcer, and Lud Gluskin, musical director, at ground-breaking ceremonies for new CBS Hollywood building. Insert, L. H. Bowman, CBS's West Coast engineer.



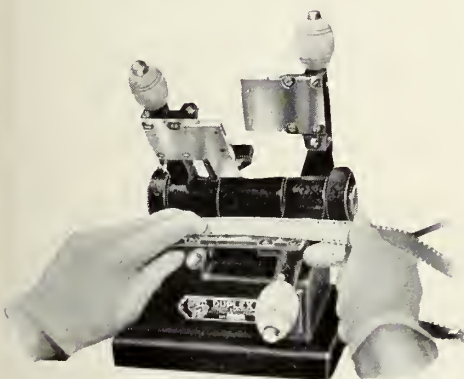
The new Duplex Splicer.

Laboratory

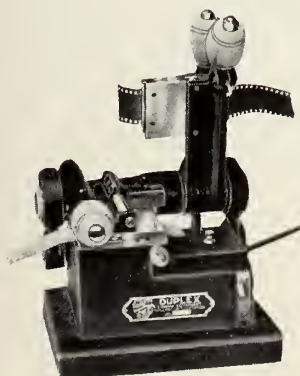
Duplex Splicer • Conclusion of Series on pH



Splicer open ready to operate.



Placing film in Splicer. Note the Splicer's small size.



One side closed to allow special emulsion scraper to work.

New Splice Block

Duplex in Production on Safe, Portable Splicer

Latest device from the Duplex Company, a modern, precise and rapid splicing block that features extreme portability, now is in production. First announcement of the new splicer created such demand that the Duplex plant is already far behind on current orders.

Based on a striving for the utmost simplicity in construction and operation, the splicer is simple and fool-proof and can be operated at high speed after brief experience. It is guaranteed to be absolutely safe.

As illustrated herewith, the DeLuxe Splicer is a compact block, weighing 25 pounds. It is six inches wide, five-and-one-half inches high and eight inches long.

An important feature is the unique built-in dry-scraping device, which removes all emulsion from the film with one flick of the finger. The scraper is set to very close register so that it removes the emulsion easily and completely with one stroke without chance of error, so that splices can be made in total darkness if necessary.

The entire machine is kept at a constant warm temperature by an electrically controlled heating unit designed to speed the drying of the cement and

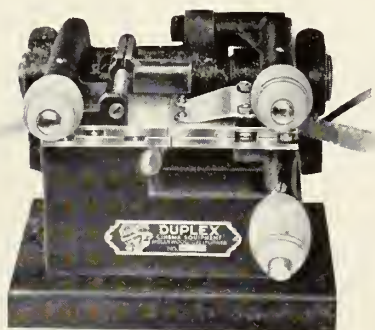
to vulcanize the splice. This unit operates on either type of current (AC-DC) and is also available for 220 volts. It warms the machine in one hour and is designed to be left on continuously for any length of time without great expense as four machines can be operated at less cost than one ordinary light bulb.

pH in Processing

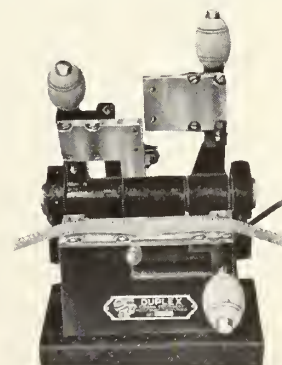
Part 3 of Series on Accurate Lab Control

In the two previous papers of this series we have discussed the significance of the term "pH" and how it is measured. We have seen that pH is a useful tool for easily handling concepts of acidity and alkalinity which would otherwise be too abstract for practical work, and we have described the modern methods of pH measurement and control.

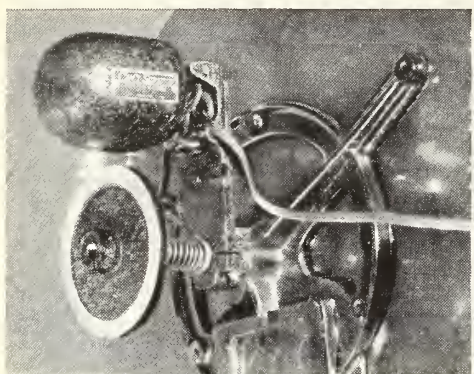
It is the purpose of this present paper to briefly outline the several major applications of pH in motion picture processing. In the photographic process, the first aspect in which we encounter the importance of pH is in the emulsion sensitivity. Carroll and Hubbard (Bur. Stds. J. Res. 1931) have investigated the effect of pH on the after-ripening of emulsions. Figure 6, taken from their



Machine closed to cement splice.



Open to show completed splice.



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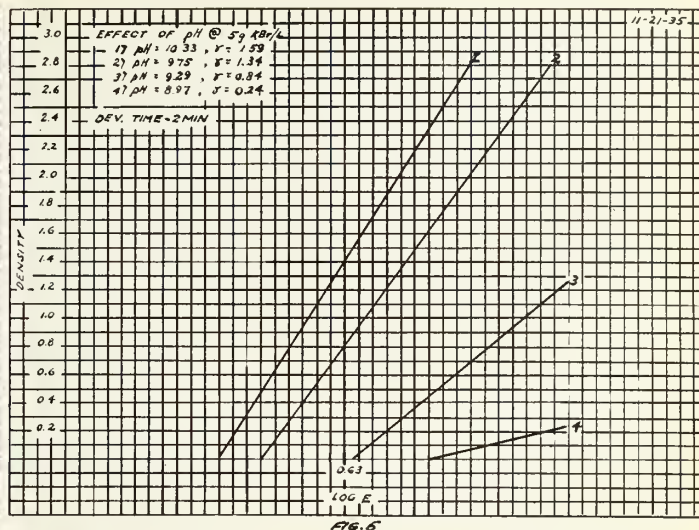
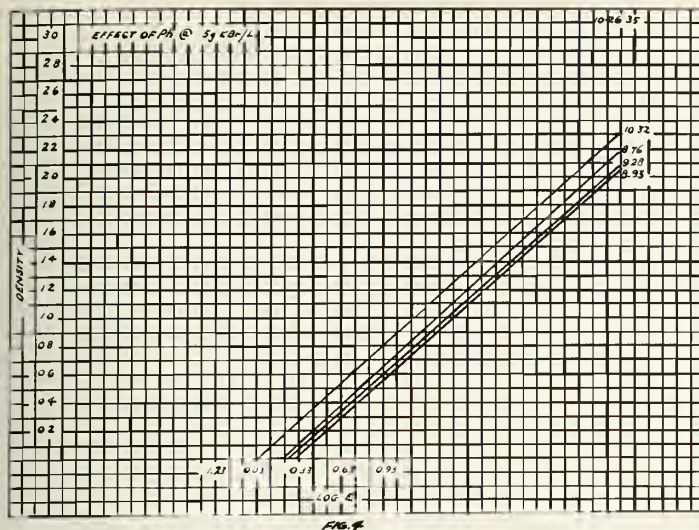
published data, illustrates the magnitude of the pH effect. Bekunoff has also published data in this connection (Photo. Kino. Chem. Ind. 1935), and reports that "anti-sensitizers" operate more strongly at lower pH values. Hypersensitization is likewise definitely a function of the pH attained in the emulsion, although degree of hypersensitization and effect on color sensitivity depend on the particular alkali used. With ammonia, the hypersensitization to red increases to a maximum up to pH 11.0, and thereafter falls off rapidly, whereas with buffers, the red sensitivity is markedly increased above pH 11.0 (Soloviev, Phot.-Kino. Chem. Ind. 1935).

Development of the photographic image after exposure is usually performed in an alkaline solution containing organic reducing agents. To obtain the alkalinity necessary for correct reduction of the exposed silver by the developing agents, various alkalis are used. The better known photographic alkalis are sodium tetraborate, sodium carbonate, trisodium phosphate, and sodium hydroxide. Laboratory men are familiar with the vastly different behavior of photographic developers containing substantially the same amounts of developing agents, but having different alkalinities. Practically every property of a photographic developer is a function of the pH of the solution. Figure 4 shows a typical effect of pH on the inertia of a positive developer at constant gamma. The developing agents were maintained constant: as will be observed, raising the pH from 8.93 to 10.32 decreased the inertia from 0.30 to 0.03.

Figure 5 shows effect of pH on gamma of a positive developer. For a given



PROMOTED. Blanche Sewell, one of the number of outstanding feminine film editors of the industry, who after years of creative participation in the assembling of scores of important pictures, now has been promoted to an assistant producer berth at MGM.



developing time and concentration of developing agents, it will be seen that contrast of a developer is governed to a surprising extent by the developer pH; in fact, this element is even more important than temperature, time, and concentration of developing agents.

The relationship between grain size and developer pH has long been qualitatively realized, but little of a quantitative nature has been published. In general the lower the developer pH, the finer the grain. Seyewetz (Bull. Soc. franc. Photo. 1935) has described a number of fine-grain developers having pH values in the range pH 8.0 to 8.4, and this may be taken as typical of these developers. Reference to the chart given on page 19 of the April, 1937, issue of this journal will show that such developers lie well below the pH range for the customary motion picture developers.

The fog level of a developer may also be affected by pH. The magnitude of this effect will vary with different formulas. In one case in the author's experience, an increase of only 0.5 pH in the pH of the chemicals going into a developer formula was accompanied by an increase in fog density of from 0.03 to 0.13.

After development film is usually given a wash or stop treatment. If the wash water has been alum-treated, the alkaline emulsion entering the wash may be spotted by precipitated aluminum hydroxide. This condition is encountered particularly in the case of negative stock, and of course may be corrected by pH control.

Entering the hypo, the film is subjected to a number of reactions, all of which are functions of pH. Sodium thiosulfate itself is not stable below pH 4.0 and will deposit sulphur rapidly at lower pH values. As shown by Crabtree and Russell (J. Soc. Mot. Pict. Eng. 1930), hypo solutions employing chrome alum as a hardener require pH values in the range 3.0 to 3.8 for successful hardening. To prevent decomposition (sulfurization) of hypo at these

lower pH values a considerable concentration of sulfite ion must be present and the concentration of sulfite required for stability is a function of the pH. At hypo pH values below pH 2.0, chrome alum does not harden, hypo decomposes rapidly even in the presence of high sulfite concentrations, and gelatin of the emulsion is excessively swollen and will reticulate badly. pH control of the hypo solution will result in

longer life without sulfur precipitation, better and more uniform hardening, and will prevent formation of chromium and aluminum hydroxide sludge.

Leaving the hypo, the film is given the final wash. This wash is of utmost importance, since it determines the final condition of the film. Any excess salts remaining in the gelatin will adversely affect the future quality of the picture and sound track. In the past, film wash-

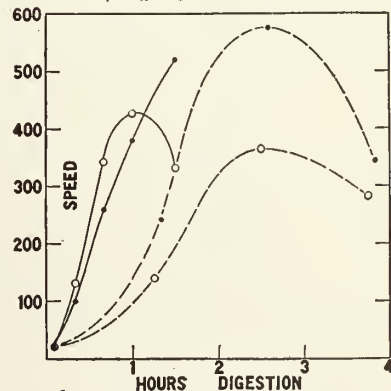
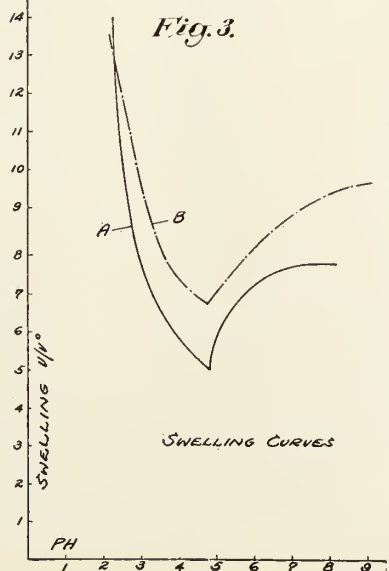
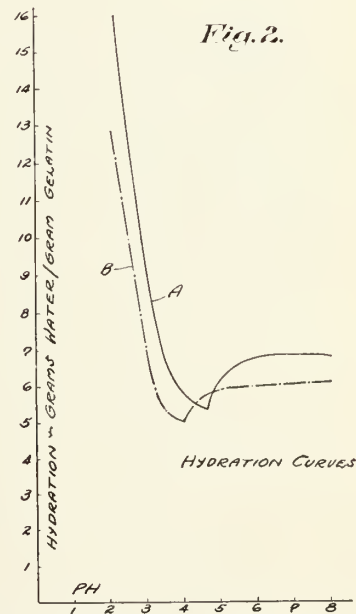
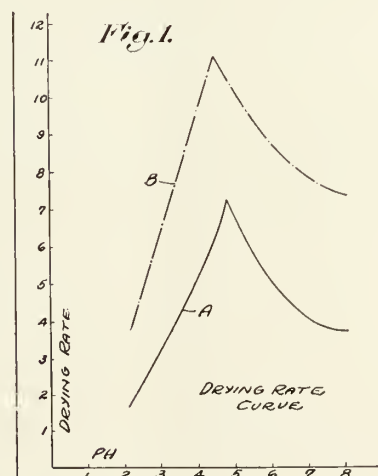


FIGURE 6—After-ripening of neutral emulsions, 4 per cent AgI, made with inert gelatin and sensitized with sodium thiosulphate. Solid lines indicate digestion as washed; dashed lines, digestion with 6 KBr per 1,000 AgBr. Digested at 50°; pH 5.2, 6, pH 7.6.

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ing has been regarded as a simple operation, and general practice has been to merely pass film through a certain amount of water until by empirical tests the film was judged to be adequately washed. However, this simple washing operation has a profound effect on the photographic emulsion. Figure 3 graphically illustrates effect of pH on swelling of motion picture emulsion. Curve A shows the swelling of Eastman emulsion at various pH values of wash water; Curve B shows the behavior of DuPont emulsion under similar conditions. This swelling affects efficiency of the washing operation in several ways. In the first place, the swollen gelatin emulsion obviously presents a greater volume of material, and a greater linear distance through which it must be removed by washing. However, an even greater effect lies in the isoelectric nature of the gelatin of the emulsion. At pH values other than the narrow range of maximum efficiency, the salts such as hypo and alum are *chemically* combined with the gelatin and *cannot be entirely removed*; their presence in the film in sufficient quantities may later cause clouding, brittleness, spots, reticulation, and ground noise. It may be estimated that efficiency of the final wash is at least doubled by proper pH control.

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tering the dry box carries with it a certain amount of water in the gelatin, which must be removed by the drying operation. Figure 2 shows the effect of pH on the amount of water carried in the gelatin. It will be seen that the hydration passes through a sharp minimum in the neighborhood of pH 4.3, and that film washed at this pH contains only three-fourths as much water as at the usual pH 8.1. This is in effect a "chemical squeegee," and from the standpoint of cost of operation, it is far more efficient than an air-squeegee. A chemical cost of a few cents a day will do the work of many horsepower expended in compressing air.

In the dry-box, film which has been washed at correct pH value will dry much more rapidly than film washed at ordinary pH values. Figure 1 shows effect of pH on drying rate; as will be observed, a three- to four-fold increase in drying rate is easily obtained by pH control, without increasing drying temperature or decreasing relative humidity. Conversely, a given degree of drying may be attained at greatly reduced consumption of fuel and refrigeration power. Conservative estimates of this saving alone have been placed at one-half mill per foot, or \$500.00 per million feet.

Other photographic processes upon which pH exerts a marked influence are those of color photography. All color operations, such as iodine bleaches, chemical tones, dye-toning, and imbibition, are profoundly affected by pH. The hydrosol image is not obtained in an iodine bleach if the pH value is incorrect, and chemical tones will produce blisters in the emulsion if the pH falls below 1.2. Imbibition operations may be regulated with extreme precision through pH control of the blank and the matrix, since the affinity or absorption of the dye by the gelatin is a function of pH.

In the zeolite process for water softening the calcium and magnesium salts of the raw water are replaced by sodium salts. With a freshly charged zeolite, the pH of the treated water is increased considerably above that of the raw water. As the zeolite is depleted, this pH increment steadily decreases, until with an exhausted zeolite the pH of the treated water becomes less than for the raw water. (Behrman and Gustafson, J. Ind. Eng. Chem. 1936). This phenomenon is utilized for rapid and simple tests for the efficiency and degree of exhaustion of a zeolite softener.

The author is indebted to Messrs. Gundelfinger and Trimble, of Cinecolor Inc., for the data on photographic developer, Mr. Behrens of Columbia Laboratories for the data on fog, and to Chemical and Research Corporation for the data on pH control.

D. K. ALLISON.

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Hollywood Offstage

Notes and Comment Gathered by Earl Thiesen

The telephone exchange at M-G-M has 593 stations and handles more long distance calls than a city of 50,000. The studio has its own industrial center within its gates including a railroad, lumber yards, shops, foundries, machine and construction shops. Yes, and police and schools and libraries. Over 150 arts and crafts are represented. Anything can be manufactured in the shops from locomotives to microscopically correct devices. The laboratory prints an average of 150,000,000 feet of release prints and 29,000,000 of daily rushes a year. They develop 26,000,000 feet of negative.

Myrna Loy went to New York for a short trip leaving orders that the half-mile of walk between her house and the swimming pool be bordered with full grown apple trees when she got back.

For fifteen cents in some theatres in St. Louis you can see three features, three comedies, get a chance on a radio and an electric refrigerator, and be given a free hamburger.

Maureen O'Sullivan chose a white linen playsuit with black polka dots.

It matches her black spotted Dalmatian doggie.

Cliff Edwards is making a ukelele of heavy cellophane and Una Merkel invented some beach gloves made of cellophane.

Now Warners have colossal swank. Eight colored service boys all dressed up in natty uniforms will flit about the sets to hold cigars for actors who are in front the cameras, scoot for coffee, brush off clothes, and be generally useful. Also to be yes-men.

M-G-M's "San Francisco" was the first American film ordered for a command showing for His Majesty King Farud of Egypt. Spencer Tracy, who portrayed a priest in this film, gets many letters asking for spiritual advice. The Tracy cost is not unique.

An amateur club in Siam wrote Porter Hall offering him 160 silver bahts a month if he would direct them in English plays. That amounts to about \$64 a month. Jean Hersholt is asked for advice on feeding youngsters ever since he appeared as "The Country Doctor." Mothers want to know if puffed rice or

oatmeal is best for two-year-olds.

Did you know that ground cork is used for prop gravel in the garden walks built on sound stages. It is, of course, soundless gravel. News from Clark Gable's birthplace bring forth that his birth was first recorded as that of a girl. George Murphy did a dance in hot water for a rain sequence number. The studio says it took three days. Henceforth Sam Goldwyn says he is going to produce all his films in Technicolor.

Warren William drove a motorized dressing room onto the "Firefly" set at M-G-M. At night he drove it off. It is soundproof, and one of the many products of his inventive mind.

Speaking of lens louses, a hen working in "Wild Honey" refused to cackle if the camera was farther than ten feet away. The biddy crackled furiously for closeups, so the director filmed the sound track in closeup and then dubbed the cackle onto the long shots.

Close-Ups

Particular interest centers the latter part of this month on the seventh annual session of the National Conference on Visual Education, which brings together the school and advertising fraternities to discuss developments and in the field to view many interesting demonstrations . . . this year's conference will be held June 21-24 . . . Paul Perry is off again, his heels barely cooled from a three year's sojourn through India, the Orient and the Philippines . . . now he's off to South America to install a laboratory in Buenos Aires for Tom White, photograph some Argentine "horse operas" and "see the world" . . . he can be reached at Tucuman 2170 Buenos Aires, Argentina.

Dr. Llewellyn J. Price, well-known to many members of the International Alliance in Hollywood, has established new offices in the Guaranty Building . . . Bell & Howell's "FILMO TOPICS" has been given a snappy new format and editorial policy that makes it very interesting . . . a Folmer Graflex press release states that they are "more than pleased" that shots taken with Speed Graphics for the second straight year won all prizes in Editor & Publisher's National News Picture Contest . . . who wouldn't be? . . . those with memories for the hey-day of light opera will be pleased to learn that Rudolph Friml has been signed by Radio to write the score for "Music for Madame," Nino Martini's next starring vehicle.



Cronenweth

A curtain of glass weighing nine tons was built for the grand finale scene of "Broadway Melody of '37." It swings backwards to the floor so it can be used in a dance by Eleanor Powell.

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Excerpt from Elizabeth Yeaman's
column, *Hollywood Citizen-News*,
Saturday, April 24, 1937:

"COLOR PROGRESS REVEALED

One of the knottiest problems of Technicolor photography has been make-up for the actors. Each new Technicolor picture shows improvement, *but the great advance for the actors is to be seen in Walter Wanger's "VOGUES of 1938."*

For that picture an entirely new make-up has been devised, and it is so lovely that I predict when the picture is released it will have a revolutionary effect on the women of the world.

Looking at Helen Vinson and Warner Baxter on the set, I thought they were only visiting until they went into a scene. *I could scarcely believe they had on professional make-up.* The effect was so lovely I asked to see the make-up.

The cast of "Vogues" are so devoted to the new make-up that they wear it for personal use outside the studio."

Max Factor

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PHOTOGRAPHER

A JOURNAL OF MOTION PICTURE ARTS AND CRAFTS
Hollywood, California

No. 9

No.



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"SOL POLITO AND FRIENDS"

Bert Longworth, in an unusual photo-composite, here highlights the work of Sol Polito, veteran ace cameraman, outstanding member of local 659, IATSE, and photographer of many of the outstanding musical and dramatic productions turned out at Burbank by Warner Bros.-First National. Big scenes and

famous faces, all have been accorded outstanding photographic handling by Sol Polito, from "Go'd Diggers" to "Petrified Forest," and running the gamut from Al Jolson, who goes back to the days of the Sunset Boulevard lot, to the company's newest star timbre, young Wayne Morris, who clicked in "Kid Galahad." Time Magazine's standardized bit of caption jargon, "Sol Polito and friends," takes on a new and bright meaning when used to describe such a layout as this.

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Mail Bag

They Like Allison

Enclosed find 25 cents for a copy of your April issue. We have been buying this publication from the counter of our local Eastman store for the last four years, and have always enjoyed it. One of the clerks in the store puts a copy aside for us every month, but that April issue went before he knew it was in. At present we are particularly interested in that series of articles by D. K. Allison on pH, and the first article is in that April issue. We have wondered for several years why more was not done on that subject, something that seemed an obvious necessity. Although our operations are trivial compared to the movies, we have been conscious of this factor in our attempts to standardize lab control. If Mr. Allison's talk before the SMPE is published, we would greatly appreciate receiving a reprint of that article.

Our congratulations on your new makeup and type faces. The present style is more in conformance with the times and trends, and the improvement is pronounced. Our only suggestion is to make more detailed the Contents Table. The present broad subject heading is OK, but under these in smaller type, in any appropriate manner or placing, should appear the secondary headings. The present arrangement makes back reference difficult and lengthy. You have to turn to the particular section and scan the pages to find what you want. Such a practice might be OK in the once-read type of publication, but do not believe you are in that class.

Respectfully,
Harold A. Willoughby.

Mr. Willoughby's letter is one of many complimentary expressions received on Mr. Allison's thorough exposition of pH.—Ed.

Milton Gold's Idea

We have been receiving your publication from month to month and have found the contents of consistently high interest. In the June issue we are especially interested in the presentation of one of the products of our manufacture—namely, Speed Graphic Camera. Your presentation of Mr. Milton Gold's Speed Graphic outfit was of double interest to us. We had not to date seen a combination exactly outfitted as is his—where the photo flash synchronizer is mounted outside the synchronized range finder.

In the line of information, we should like to call attention to the caption which accompanied the illustration wherein the camera is referred to as an "Eastman Speed Graphic." The Speed Graphic cameras are made by the Graflex Corporation—a company entirely separate from the Eastman Kodak Company.

We thank you very much for the editorial cooperations that have been afforded the Graflex and Speed Graphic

International PHOTOGRAPHER

A JOURNAL OF MOTION PICTURE ARTS and CRAFTS

Vol. 9

Hollywood, July, 1937

No. 6

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JOHN CORYDON HILL, *Art Editor*

D. K. ALLISON, *Contributing Editor*

A Monthly Journal Dedicated to the Advancement of the Motion Picture Industry in All Its Branches: Cinematography, Professional and Amateur; Photography, Lighting, Process, Sets and Decor., Laboratory and Processing, Film Editing, Sound Recording and the Allied Arts and Crafts of Theatre Projection and Operation.

The International Photographer, as the official publication of the International Photographers, Local 659, a part of the International Alliance of Theatrical Stage Employees and Motion Picture Machine Operators of the United States and Canada, not only represents the entire personnel of photographers now engaged in professional production of motion pictures in the United States and Canada, but also serves other technicians in the studios and theatres, who also are members of the International Alliance, as well as executives and creative artists of the industry.

CONTENTS

ON THE COVER. A beautiful example of photographic composition, taken on a location for Paramount's "Good Night Ladies." Johnny Downs and Eleanore Whitney are the young couple. The still photographer was Malcolm Bullock, member of Local 659, IATSE.

Frontispiece by Bert Longworth.....	1
Mail Bag	2-3
Tradewinds	5-6-7-8-9
Camera	10-11-12-13-14-15-16-17
Process	18-19
Sound	20-21
Lighting Sets	23-24-25-26
Projection	26-27-28-29
Hollywood Off-stage	29
Radio	29-30-31
Classified Directory	32

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line in the past.

Sincerely,

H. A. Schumacher,
Director of Sales, Folmer Graflex Corp.

To both Folmer Graflex Corp. and the Eastman Company, apologies for careless copy-reading.—Ed.

Reflex Focusing Device

We thought you would like to make mention in your notes of interest to the amateur, of a special reflex focusing device we have constructed for use with the CineKodak Special Camera.

As you doubtless know, when a 200-foot magazine is used on this camera, the photographer is unable to use the reflex focusing device of the camera itself.

We have constructed an attachment for this camera which permits this reflex focuser being used as you will note by the enclosed picture. The focus is viewed at the right and rear of the camera with greatest facility.

The owner of a Cine-Kodak Special will find this is of inestimable value and we are sure your readers will be glad to know that such a device is obtainable on special order only.

Yours very truly,

Lewis Muscat, Hugo Meyer & Company.

For illustration of Hugo Meyer & Company's reflex focusing attachment, see cut this page.—Ed.



Meyer Reflex Focuser

Advertiser's Results

We wish to express our appreciation at this time for the numerous considerations with which you have favored us. Your articles describing our several new machines have pleased us in every manner. Not only were they interesting reading, but they have brought us prospective customers both in the United States and abroad.

Since re-entering the motion picture field we have found that your magazine has been a wonderful aid in circulating the news about our new and our improved machinery, and we certainly will recommend you to any one who is considering advertising in the picture industry.

Hoping that we will always maintain our pleasant business and friendly relationships, and thanking you sincerely, we remain,

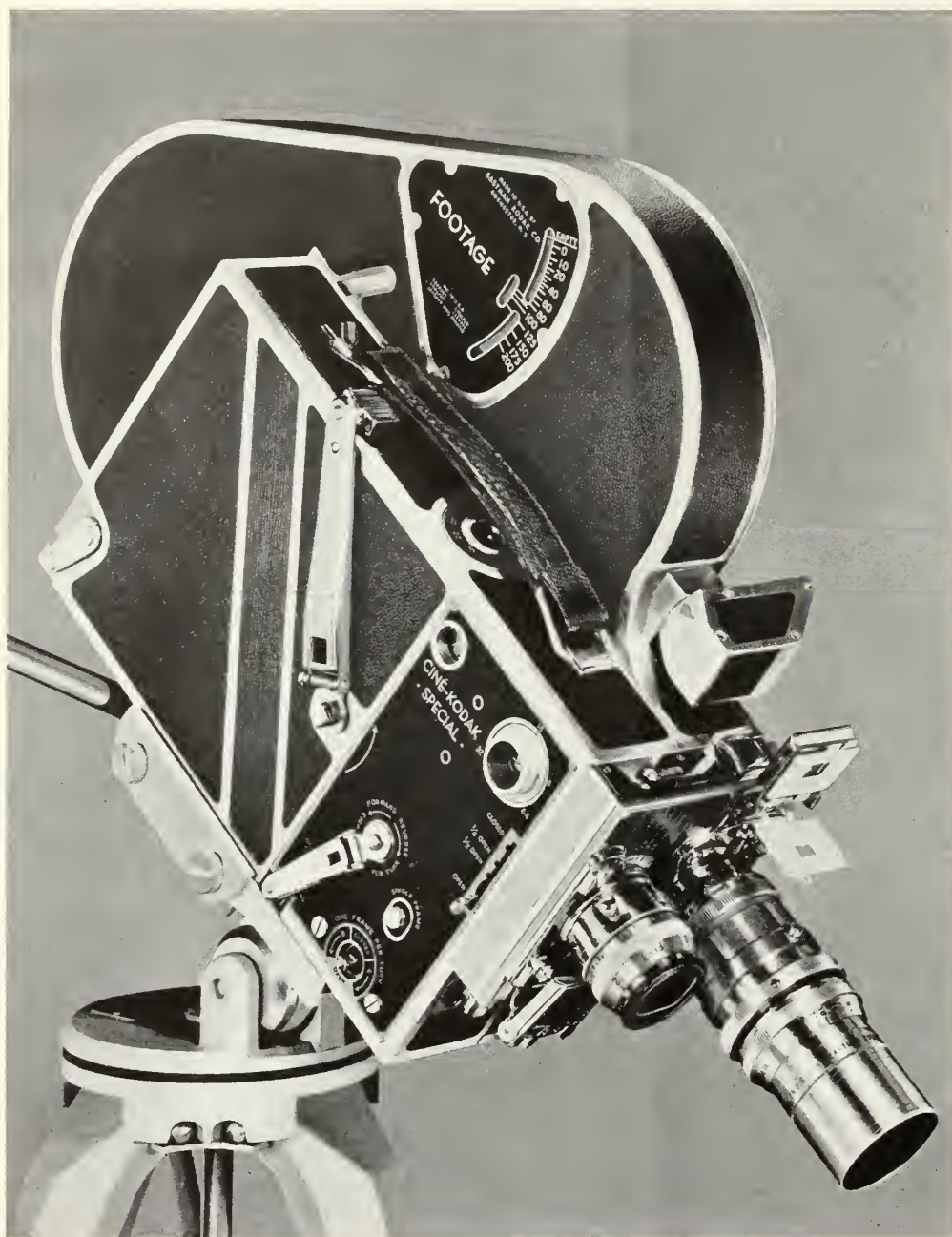
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Duplex Cinema Equipment.

To Duplex Cinema Equipment, thanks for an unsolicited testimonial of International Photographer's value to its consistent advertisers.—Ed.

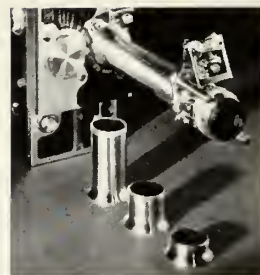




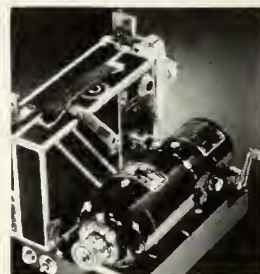
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The Optical Finder corrects parallax, shows the field, at all distances, of all focal length lenses.

International PHOTOGRAPHER

A JOURNAL OF MOTION PICTURE ARTS AND CRAFTS

Vol. 9

No. 6

Tradewinds

Color • "Press" Book • P.A.'s Yarn • Hollywood's Camera Cranes

COLOR: New deal around corner as experts make sensational strides in breaking down barriers to single film photography and processing.

Color today is the hot potato of industry trade discussion. After years of off-again-on-again shenanigans in which color took rides both up and down, the subject is again as hot as a firecracker and rumors are flying thick and fast. Like television, natural color under approximately black-and-white production conditions is again "just around the corner."

Although rumor is rife and many a story can not be confirmed, technical experts and high executives are generally convinced that the time is at hand for a new deal regarding color on motion picture programs and it is conceded that the next year holds prospects of sensational developments even to the possible extent of a gigantic color war for industry business between the big raw film companies.

From the welter of color talk, processes, trade-names and conflicting claims, several salient points are taking definite form:

1. Color can not be stopped from assuming an increasingly important place on company programs, because many executives are convinced that for certain stories, its compelling values and exploitation possibilities offset its present increased costs and other production drawbacks;

2. Public reaction to color, according to a compilation of various impartial sources, today is approximately 60-40 in its favor and improving quality is pushing up the pro percentage figure;

3. Color will overcome its biggest stumbling block when pictures can be photographed on one piece of film under conditions approximating normal

black-and-white and with regulation cameras; and can be processed and carried on into quality release prints within a close range of black-and-white service and cost.

It is along the latter lines that the trade is buzzing with a host of rumors and it is clear to inside observers that great hopes of early progress along these lines are held by those who now are working intensively to lift color completely beyond the experimental stage, although all factors are extremely cagey about hazarding any definite predictions.

It is the pressure of experimentation and hoped-for progress that is forcing the color situation into a direct parallel between the present black-and-white film situation in the industry. Early expected breaking down of the techni-



COLOR FILMS FOR KIDDIES. First color features produced exclusively for children are a series financed by the Julia Ellsworth Ford Foundation, and produced independently in Hollywood. Sponsor is a wealthy New York woman, who wrote the stories of the first two pictures, "Snickerly Nick and Buzzy the Pirate" and "Ra Hould Conquers the Dragon." The new Dunningcolor, for both 16 and 35 mm., was used. Ray Nazzaro

supervised the productions, which were directed by Pauline Parker and photographed by Ray Fernstrom, Local 659, assisted by Roy Trippett, Local 659. Miss Parker is seen (center) talking over production with Fernstrom. Tall youngster in scene to right is Ra Hould, who has been featured in a number of Paramount pictures. The stills are by Paul Park, another member of Local 659, IATSE.



Paramount publicity department's new service to press; handy, neatly turned out books of factual data on film.

cal, time and cost barriers to practical color is resulting in an organization of forces along traditional industry lines.

Within a short time, it is predicted, color will no longer be a matter of complicated technical hocus-pocus, of special camera and gadgets, of mysterious passwords to success in production of quality pictures. These will fall by the wayside because the actual film itself, plus designing of sets, their lighting and their photography for proper color balance and contrast, all these elements to be subject to accurately controlled and speedy laboratory processing, will constitute the essentials of color picture-making.

Color will compete with black-and-white on its own grounds and cameramen, electricians, art directors and other technical workers will be able to adapt themselves to such competition as normal procedure, it is predicted.

Such developments inevitably will throw the situation into the identical status of black-and-white, with Eastman, Dupont and Agfa competing for industry attention with their products, it is predicted.

This marshalling of forces in a gigantic new film war, to be fought with test-tubes and sales contracts, already is taking shape. Eastman, dominant in raw film sales now, with its Kodachrome, is tied in with Technicolor, which today commands a runaway lead over all other color competitors. Their cross-licensing agreements, reached some time ago, now are taking shape in the form of the most intensive laboratory research to coordinate the modern and superior features of Kodachrome photography in color to Technicolor's giant plants and production facilities.

Agfa, with Agfacolor, another three-color process film, using several emulsions on a single base, but in a different system than Kodachrome, though still fighting through the experimental stages, obviously is arming itself in advance for the coming fray.

Dark horse in the setup is Dufaycolor, whose stock rose highly on the trade gossip market last month as a result of the unusual success of Pathe's Dufaycolor newsreel of the British Coronation. Today's Cinema, British trade journal, reviewing the Coronation reels, stated:

"Pathe's Dufaycolor newsreel sets an extraordinarily high standard in colour photography, achieving not only realism in colour and atmosphere, but a stereoscopic effect . . . every foot cre-

ated an indelible impression of the magnificence of the pageantry."

Details of the setup between Dufaycolor, Ltd., an English firm, and the powerful DuPont organization, are not generally known. DuPont does put the emulsion on a special base supplied by the color concern, which has a reseau or screen line pattern specially prepared in lines as fine as 40 per millimetre. However, trade observers feel that if Dufaycolor lives up to its promise in the success of the Coronation shots, DuPont, through its tieup with the company, also is in a very favorable position for any impending color war. Of course, it is generally conceded that nothing but a three-color process will meet satisfactorily demands of the modern color competition.

Also receiving considerable publicity is the Keller-Dorian system, a French company's lenticular base film, in which Grand National is interested from the production standpoint, although the actual deal is dependent upon experiments still in progress.

The latter two systems are additive processes, while Kodachrome and Agfacolor are subtractive. Scores of other color methods, under a wide variety of names, also are under various stages of development, but are at present in no position to compete with the big three either in claims, actual work to show or in financial and organization setups.

While undoubtedly the present sensational strides in color are in many respects being kept under cover as much to avoid any extravagant claims until all problems have been ironed out as to protect trade secrets, nevertheless developments are coming thick and fast on many fronts.

Eastman is erecting a new three-story building on Las Palmas Boulevard, in Hollywood, which will be devoted greatly to the processing of 35mm Kodachrome film.

Technicolor and Eastman experts are constantly exchanging ideas and experiments are virtually a 24-hours per day routine at the latter's Rochester plant.

Technicolor experts are known to be surveying their entire setup, not only to expand production facilities, already strained to the limit, and for which over a million already has been appropriated, but also to determine all angles of adapting their methods to the new Kodachrome.

In London, Dr. Herbert T. Kalmus is quoted in the trade press as predicting

early color photography with ordinary cameras and that color separations will be made direct from the single film used. This is interpreted by technical experts as a virtual informal statement of the Technicolor-Eastman setup and that pictures will be shot in Kodachrome, processed in the Eastman plant here, handed over to Technicolor for separation negatives and release prints turned out through Technicolor's imbibition printing methods.

Meanwhile, J. Walter Horner is in Hollywood representing Dufaycolor and conducting daily experiments in co-operation with a major lot, while Dufaycolor eastern headquarters also is working with several major motion picture concerns. The company is concentrating on intensive study of both motion picture and still photography under practical production conditions. Dufaycolor is particularly enthusiastic over its negative-positive method of direct color release print production and is bending every effort to develop its technique from shooting to laboratory to approximate black-and-white conditions.

Meanwhile, despite the considerable air of mystery surrounding color progress, the still picture situation is becoming an increasing headache to all studios. Demands for color pictures for reproduction are flooding in from newspapers, press services and magazines. Every studio publicity and still department is conducting experiments.

Most radical steps being taken in the Southern California sector to meet this situation are by MGM and Western Lithograph Company, a major coast printing concern. Both are installing complete experimental laboratories and plan separate programs of at least six months' complete investigation and scientific checking up of every available color still system with the prime aim of securing work that will reproduce satisfactorily in any of the established printing processes.

The latter organization is installing the most complete color laboratory west of Chicago, and Don Hooper, member of Local 683, IATSE, has been employed to handle the experimental work.

It is the belief of executives of MGM and the Western Lithograph Company that regardless of what color motion picture methods assume dominance, that the imperative news and exploitation demands for color news and publicity pictures require a thorough examination of the field, primarily from the

standpoint of printed reproduction. Other studios and printing trades organizations are expected to follow along these lines.

Ed Gibbons

"Press" Book

● Paramount's handy fact service books on individual pictures make hit with newspapermen.

Press books are an old story in picture selling. Loaded with plugs, ballyhoo and ad and publicity suggestions, they are a familiar sight in theater offices. But the first and only press book directly for the press is published by the Paramount publicity department. It is illustrated herewith. Now in its fourth month, the added service goes to 2500 correspondents, editors and periodicals. The stunt has made a hit with newspapermen because it is completely devoid of the usual ballyhoo and selling copy appearing in the regular press-books sent to exhibitors and the publicity material with which most journalists are flooded by the industry.

Typographic presentation is as conservative as the factual matter that is contained in the books, which are spiral-bound for convenient handling. Complete production and credit data on an individual film is contained in a book, along with information on how the picture came to be made; the producer, director, writers and other personalities behind it; interesting side-lights on production angles, plus short biographies of the featured players. Well-chosen illustrations are a distinctive feature.

Principal aim of Paramount's publicity department in compiling the material under the editorial guidance of Terry DeLapp and Ken Whitmore, is to gather in as condensed and handy form as possible all pertinent fact information on a picture for ready reference by a newspaperman, particularly the motion picture page editors throughout the country. The idea was expanded by Christopher Dunphy, the studio's publicity director from a mimeographed service, previously sent by the studio press department to theaters and newspapers. Excellent reaction from the press has stimulated other studio exploiters to study the possibilities of the "press books for the press."

Sunday's Woe

● P. A.'s tale of the new deal in Hollywood swank excellent sample of studio press copy.

(Studio publicity men churn out many a good story for the press. In fact, much well-written matter appearing under various bylines in newspapers and magazines is actually concocted by studio press departments. The following feature yarn by Ted Bonnet of the Paramount Pictures publicity staff, is a typical example of easy-reading feature material. It is purposely un-illustrated to allow the story to stand on its own as a good writing job.—Ed.)



TOM SAWYER, in real life Tommy Kelly, with a story as dramatic as any part he'll ever play. The 12-year-old son of poor Bronx family, his dad on WPA relief for two years, the youngster was selected from over 25,000 tested for the role by David O. Selznick. Winner in a nationwide search that lasted nine months. Tommy will recreate Mark Twain's immortal boyhood hero in Selznick International's remake of the classic, to be directed by H. C. Potter. (Above, right) The director gets acquainted with his youthful star. (Bottom, left) Youthful star gets acquainted with a motion picture camera, assisted by cameraman James Wong Howe, Eric Stacey, assistant, and Director Potter. Tommy is one of a number of new faces signed by the Culver City producer in an intensive search for new talent.

At a street corner on the outskirts of Beverly Hills, Mr. Daniel Sunday, better known to his associates as "Foghorn," still maintains his bus stand, with the sign out: "See the Homes of the Stars!"

The bus is practically new, and the sign as fresh as it ever was, and the tourist trade continues to keep the business a more or less paying proposition. But Mr. Sunday no longer feels the same about it.

Being a party with a good deal of pride in his profession, he used to derive a certain satisfaction out of guiding the visiting fans about this celebrated bailiwick. But that was in the days when the place was really grand.

Frankly, a sightseeing trip through the screen colony isn't so impressive any more. The palaces are fewer, the swimming pools smaller, the architecture less exotic. And Mr. Sunday is facing the facts.

"What have I got to offer now?" he asks disconsolately. "Just Pickfair and the Harold Lloyd mansion, and maybe a few more. Then when they want to know where a star like Fred MacMurray lives, I take them past nothing but an ordinary apartment house, and say, 'Up there.' Can you imagine? Just an ordinary apartment house. It ain't even hon-ton."

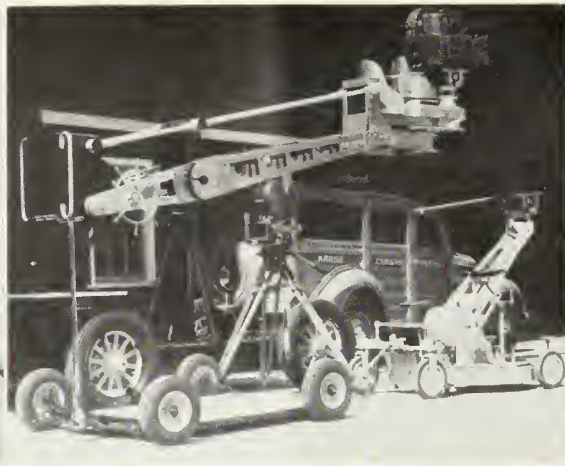
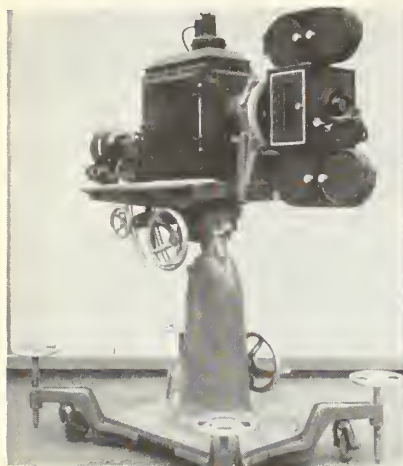
Offhand, Mr. Sunday's indignation at this state of affairs may seem presumptuous, but the more thoughtful will perceive upon reflection that he has certain rights in the matter. Briefly, this citizen is another victim of economic change, like the cotton pickers who have been replaced by machines. He is a second hand dealer in glamour and he is being deprived of his stock in trade.

It used to be that the stars built palatial residences such as a visiting fan who charts a seat in Mr. Sunday's bus might expect to have pointed out to him. The stars used to have Roman pools, hanging gardens and private golf courses. They put glamour into their houses. But today they are practically roughing it by comparison.

Clark Gable and Marlene Dietrich, for instance, both occupy hotel suites; and in his business Mr. Sunday cannot use a hotel suite at all.

Fred MacMurray, George Raft, Mae West, Randolph Scott, Sylvia Sydney, Martha Raye, Shirley Ross and Olivia de Havilland all live in apartments. And small apartments at that.

It was a bitter blow to this Hollywood dragoman when the glamorous Carole Lombard gave up her big house not long ago and took a measly little six-room affair without even a swimming pool. And when Jean Harlow



Left, new Teague process printer, which handles black-and-white and color film; story on page 18. Center: array of cranes and dolly equipment owned by Henry Kruse's rental organization. The large crane is the first free-lance rental crane available to the industry. Right, a rare shot of Victor Raby, inventive genius, who heads the Studio Equipment

Company. The new Kruse crane is the latest piece of studio equipment designed and built by him. Raby is notorious amongst technicians for his modest-self-effacing manner. This is one of the few pictures he ever has posed for. Story and table on this page.

evacuated her castle in Coldwater Canyon for a similar lean-to, Mr. Sunday felt like going out and getting drunk.

He had some hopes a year or so ago when Gary Cooper started building out in Brentwood, but even Gary let him down. He built a small, rambling place of the Bermuda type.

Frances Dee and Joel McCrea have a seven-room house in the same subdivision, Barbara Stanwyck's place has only six rooms, and Ray Milland's an incredible five! Jean Arthur lives in a small beach cottage at Malibu, Ida Lupino in a rustic dwelling atop Mt. Lookout, and Frances Farmer in a modest abode tucked away in the Hollywood hills.

When his customers request Mr. Sunday to show them where Kay Francis lives, it positively makes him feel like blushing. It's a surprisingly unim-

pressive cottage in North Hollywood, for which she pays less than \$100 rent a month.

There are, of course, a few pretentious houses left in the colony besides Pickfair and the Lloyd place. William Powell, now, has a whale of a mansion, and so has Irene Dunne, Greta Garbo, Claudette Colbert and Mr. and Mrs. Franchot Tone. But they're the exceptions. Palaces are becoming passe in Hollywood and the stars who still live in the grand manner are growing fewer all the time.

"You'd think picture people'd have some showmanship!" marvels Mr. Sunday. "Think of the publicity it means when I show the folks a fine, upstanding house and tells them a certain star lives there! But I dunno; they don't seem to care any more."

Sometimes when Mr. Sunday takes a customer's money he feels sort of ashamed of himself!

Camera Cranes

● Notes and factual data on one of the industry's invaluable adjuncts to effective photography.

Camera cranes play an important part in picture production. No spectacular musical number, winding staircase shot, dramatic court scene, whether law or regal, could do without them. They allow the camera to ride through the air to bring dramatic attention to one window of many in a building, to focus on one pair of dancers out of a hundred, without breaking the continuous action of the scene. Directors love to impart arty and breath-taking sequences to pictures, with the camera crane as the mechanical servitor of art and showmanship.

Giant cranes, however, are expensive to build, costly to operate. Despite their

Statistical Data on Industry's Camera Cranes

Compiled by Roy Overbaugh, Selznick International, and Photographer Staff

STUDIOS:	Fox	Fox	MGM	MGM	U. A.	U. A.	Roach	Univ.	Gen. Serv.	RKO	RKO	Warner	PARAMOUNT Boom 1	PARAMOUNT Boom 2	PARAMOUNT Boom 3	Kruse Camera Rentals
Crane Arm Total Length	21' 4"	15'	30' 6"	20'	32'	22' 3"	21' 4"	36' 6"	34' 4"	31' 10"	10' 6"	29' 4"	33'	33'	12'	18"
Crane Arm from Center Post	19' 4"	13' 3"	22'	14'	22' 6"	13' 6"	14' 8"	28'	21'	21' 6"	10' 6"	21' 6"	21' 6"	21' 6"	8' 10"	11' 6"
Lens Height from Floor	21' 4"	15'	18' 6"	16' 6"	20'	13' 6"	17' 6"	42'	23' 4"	20' 5 1/2"	11' 6"	21' 7"	21'	21'	9' 6"	14' 3"
Overhang or Crane Extension from Floor	14' 6"	9' 3"	18'	7' 7"	15' 6"	13' 6"	9' 4"	21' 6"	17'	16' 5"	6' 6"	15'	Front 16' 6"	16' 6"	5' 6"	7' 6"
													Side 19' 6"	19' 6"	7' 6"	10'
Top of Center Post from Floor	8' 4"	6' 2"	8 1/2"	7' 7"	10"	8"	7' 10"	15' 6"	10' 6"	9' 4"	5' 6"	9' 23/8"	7' 5"	8' 9"	5'	7' 5"
Carriage Clearance from floor	9"	9"	8"	1'	9"	8"	5"	8 1/2"	1'	6"	6"	9 3/4"	10 1/2"	10 1/2"	4 1/2"	8 1/2"
Overall Width of Carriage, Tread to Tread	5' 7"	5' 7"	6' 2"	5' 9"	6' 5"	5' 8"	5' 7"	8'	8' 5"	5' 7 1/2"	5' 4"	5' 4"	4' 8 1/2"	5' 8 1/2"	4'	4' 9 1/2"
WHEELBASE	10'	7' 4"	15' 10"	11' 9"	6' 6"	5' 8"	5' 9 1/2"	16'	15' 6"	9'	5' 8"	10'				
Overall Length of Carriage	13'	9' 10"	15' 10"	13"	32'	27' 3"	14"	23' 8"	20'	10' 6"	8'	15' 4"	10' 2"	11'	5'	7'
Center Post to Forward Part of Front Wheels	6' 6"	4'	13'	8'	7'	4' 2"	5' 4"	13' 9"	24' 2"	5' 4"	3' 5"	6' 6 1/2"	6' 6"	6' 3"	2' 10"	4'
Pneumatic Tires	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes	No	Yes	Yes	Yes	No	Yes
Weight (Lbs.)	9000	5000	10,000	7,500	8,000	6,500	7,000	8,000	10,000	7,000	2,500	7,250	6,900	7,600	2,000	5,000
Is There an Extension?	Yes*	No	No	No	No	No	No	No	Yes	No	No	No	No	No	No	No

* 6' extension forward end of arm and 30" post extension.

frequent picturization in publicity stills, the entire industry gets along with 14 cranes of the type that could be described as big, by a system of loans and rentals between the various companies. Only free-lance large-size rental crane in the industry is the one just made by Victor Raby's Studio Equipment for the Henry Kruse rental organization, and illustrated on Page (?)

Biggest crane in Hollywood is Universal's, which cost over \$40,000 to build. General Service also has a monster crane. Rentals range from \$50 to \$300 per day. Complete details of the camera cranes available throughout the industry are contained in the accompanying table. The information originally was compiled by Roy Overbaugh of Selznick International and has been carefully checked by the International Photographer's staff with studio departments. This is the first time this information has been made available in handy form to those studio executives and departments interested.

America's Favorite Songs

Interesting results recently were received in a countrywide poll for the ten most beloved melodies, conducted by Charles Pritzker, production executive of CBS, which elicited the votes of more than a million radio listeners who wrote giving their preferences. Of 16,350 songs and 3,450 composers that were mentioned, Stephen Foster and his immortal works appear three times on the list. Popular leader is John Howard Payne's "Home Sweet Home;" next "Silver Threads Among the Gold"; then Stephen C. Foster's "My Old Kentucky Home" was chosen; fourth was the epic of barber-shop harmony, "Sweet Adeline;" and "Swanee River" placed fifth. "When You and I Were Young, Maggie," Foster's "Old Black Joe," "Carry Me Back To Old Virginny," and "Love's Old Sweet Song" were sixth, seventh, eighth, and ninth. Tin Pan Alley's only representative was Irving Berlin's "Alexander's Ragtime Band," which placed tenth.

"New Faces"

International Photographer carries on the back page of this current July issue a paid advertisement from RKO-Radio. It is singularly appropriate that this "new face" among International Photographer's family of regular advertisers should be devoted to the exploitation of the company's spectacular new musical production, "New Faces."

We are more than proud of the high caliber of industry advertisers who find it good business to regularly place advertising copy in this publication, whether it be direct selling copy or industry good will messages. We believe that the placement of this new ad is a sincere recognition by executives of RKO-Radio that the International Photographer is not only a medium with interested readers in many branches of the industry but is also a constructive "journal of motion picture arts and crafts" that honestly merits industry support.

The CINEMATOPHOTOGRAPHER'S BOOK of TABLES

By Fred Westerberg

Cameramen Should Add These to Their Red Books

WIDTH OF FIELD

16mm. FILM

Distance To Subject In Feet	FOCAL LENGTH OF CAMERA LENS							
	15mm.	20mm.	1 In.	35mm.	2 In.	3 In.	4 In.	6 In.
	HORIZONTAL ANGLE OF VIEW IN DEGREES							
	35.6	27.1	21.5	15.7	10.8	7.2	5.4	3.6
WIDTH OF FIELD IN FEET								
3	1.9	1.4	1.1	.8	.5	.35	.25	.....
4	2.6	1.9	1.5	1.1	.7	.48	.35	.....
5	3.2	2.4	1.9	1.4	.9	.60	.44	.....
6	3.9	2.9	2.3	1.6	1.1	.73	.54	.35
7	4.5	3.4	2.7	1.9	1.3	.85	.64	.41
8	5.1	3.9	3.0	2.2	1.5	.99	.73	.47
9	5.8	4.3	3.4	2.5	1.7	1.1	.82	.54
10	6.4	4.8	3.8	2.7	1.9	1.2	.92	.60
11	7.1	5.3	4.2	3.0	2.1	1.3	1.0	.66
12	7.7	5.8	4.6	3.3	2.3	1.5	1.1	.73
13	8.4	6.3	4.9	3.6	2.4	1.6	1.2	.79
14	9.0	6.8	5.3	3.9	2.6	1.8	1.3	.86
15	9.7	7.3	5.7	4.1	2.8	1.9	1.4	.92
16	10.3	7.7	6.1	4.4	3.0	2.0	1.5	.98
18	11.6	8.7	6.8	5.0	3.4	2.3	1.7	1.1
20	12.9	9.7	7.6	5.5	3.8	2.5	1.9	1.2
25	16.1	12.1	9.5	6.9	4.7	3.2	2.4	1.6
30	19.3	14.5	11.4	8.3	5.7	3.8	2.8	1.9
40	25.8	19.3	15.2	11.1	7.6	5.1	3.8	2.5
50	32.2	24.2	19.0	13.8	9.5	6.3	4.8	3.1
60	38.6	29.0	22.8	16.5	11.4	7.6	5.7	3.8
70	45.0	33.8	26.6	19.3	13.3	8.9	6.7	4.4
80	51.5	39.6	30.4	22.1	15.2	10.2	7.6	5.0
90	58.0	43.5	34.2	24.8	17.1	11.4	8.5	5.7
100	64.4	48.3	38.0	27.6	19.0	12.7	9.5	6.3

Based on Projection Aperture .284 by .380 of an Inch.

HEIGHT OF FIELD

16mm. FILM

Distance To Subject In Feet	FOCAL LENGTH OF CAMERA LENS							
	15mm.	20mm.	1 In.	35mm.	2 In.	3 In.	4 In.	6 In.
	VERTICAL ANGLE OF VIEW IN DEGREES							
	27.0	20.5	16.2	11.1	8.1	5.4	4.1	2.7
HEIGHT OF FIELD IN FEET								
3	1.4	1.1	.8	.6	.4	.26	.19	.....
4	1.9	1.4	1.1	.8	.5	.36	.26	.....
5	2.4	1.8	1.4	1.0	.7	.45	.33	.....
6	2.9	2.2	1.7	1.2	.8	.55	.41	.26
7	3.4	2.5	2.0	1.4	1.0	.64	.48	.31
8	3.8	2.9	2.3	1.6	1.1	.74	.55	.36
9	4.3	3.2	2.6	1.8	1.3	.83	.62	.41
10	4.8	3.6	2.8	2.0	1.4	.92	.69	.45
11	5.3	4.0	3.1	2.3	1.5	1.0	.76	.50
12	5.8	4.3	3.4	2.5	1.7	1.1	.84	.55
13	6.2	4.7	3.7	2.7	1.8	1.2	.91	.60
14	6.7	5.0	4.0	2.9	2.0	1.3	1.0	.65
15	7.2	5.4	4.3	3.1	2.1	1.4	1.1	.69
16	7.7	5.7	4.6	3.3	2.3	1.5	1.2	.74
18	8.6	6.5	5.1	3.7	2.6	1.7	1.3	.83
20	9.6	7.2	5.7	4.1	2.8	1.9	1.4	.94
25	12.0	9.0	7.1	5.1	3.5	2.4	1.8	1.2
30	14.4	10.8	8.5	6.2	4.2	2.8	2.1	1.4
40	19.2	14.4	11.3	8.2	5.7	3.8	2.8	1.9
50	24.0	18.0	14.2	10.3	7.1	4.7	3.5	2.4
60	28.8	21.6	17.0	12.4	8.5	5.7	4.3	2.8
70	33.6	25.2	20.0	14.4	10.0	6.6	5.0	3.3
80	38.4	28.8	22.7	16.5	11.4	7.6	5.7	3.8
90	43.2	32.4	25.6	18.5	12.8	8.5	6.4	4.3
100	48.0	36.0	28.4	20.6	14.2	9.4	7.1	4.7

Based on Projection Aperture .284 by .380 of an Inch.

Camera

Camera Advice • Pan K • Filmo 8 • Duplex • Kodaks • Polarator

Camera Daze

● Items worth serious attention by those who have just "discovered" photography.

(Tremendous enthusiasm is being shown these days for photography—from the arm-chair interest of perusing such hit publications as *Life* and *Look* to the actual adoption of amateur photography as a hobby—but many who currently are discovering the possibilities in photography are confused and puzzled by a current welter of claims and propaganda from various interested sources. The following article by Karl A. Barleben, Jr., FRPS, a frequent contributor to *International Photographer*, presents a number of interesting personal slants on the situation.—Ed.)

It is needless to point out the many advantages offered by photography as a hobby, for these are more or less so well known that they do not merit repetition. There is one consideration, however, which does present a problem

to the beginner in photography; one which perhaps can never be completely settled because it involves personal taste and preference to such a marked degree. That is the camera itself. When we think of photography, we automatically think of a camera in connection with it, but just what sort of a camera should we visualize? It is natural that there be many different kinds, shapes and styles of cameras available, each suited to someone's particular fancy. It is no wonder, then, that the amateur becomes confused the first time he tries to shop for a camera. Through inexperience, he is easily talked into buying this or that model by the salesman or by some friend who usually is just as familiar with cameras as he, but of course won't admit it.

It can be said in all truthfulness that many an aspiring photographer has become discouraged through the fact that he unwittingly purchased the wrong kind of camera for his purpose. This may be regarded by many as an overstatement. But let us look into the facts a little deeper.

After all a camera is merely a light-

tight box which provides for a lens at one end and a support for the sensitive material at the other. This, basically, is the camera. It is even possible to dispense with the lens, a pin-hole doing just as well in many instances. In fact, some pictorialists prefer the pin-hole lens to the finest glass lens for certain artistic effects.

It is likewise true that the camera itself is of relatively small importance . . . it is the manner in which it is handled that counts. The camera is more or less a tool, just as brushes, colors and canvas are tools to the artist. Without the artists's skill, the finest brushes, colors and canvasses cannot be made to produce a satisfactory painting. The same holds true with regard to the camera and photography. It is for this reason that it has often been stated that a simple box camera in the hands of an expert is capable of producing salon prints, whereas an elaborate and expensive camera, in the hands of an inexperienced person, is incapable of producing even a mediocre picture.

Admittedly there is a personal pride involved in the ownership of a fine camera. In fact, all too often a person is more eager to possess a costly camera than to make good pictures. The



WILD HORSE ROUNDUP. Unusual shots from Grand National's spectacular mammoth "horse opera," "King of the Sierras," which stars 2,000 wild Arizona mustangs in a roundup tale that may never again be available to the camera. (Center) Baby colt picked up by Tom Galligan, and now being reared

on a North Hollywood ranch, peers out weakly after his first plane ride. (Circle) Raoul Bessette and Tom Galligan, members of Local 659, IATSE, snapped in action during production. The spectacular scenes of the rearing equines were photographed by Tom Galligan. Center pictures are by Ted Gillingham.

wise tyro starts with a simple camera and gradually works up to the more elaborate outfits as he becomes increasingly proficient in photography. Unfortunately, many beginners start off on the wrong foot, so to speak, by investing in an expensive camera for their initial efforts, probably figuring that the gadgets on the camera will make up for any lack of knowledge and skill on their part. These are the truly sad cases; the cases which sooner or later result in giving up photography as a poor bet.

Regardless of how costly and elaborate a camera may be, it **must** be learned. The basic principles of photography must be understood before the camera itself can be made to go through its paces without a hitch. The more flexible cameras, too, offer an additional handicap to the beginner by virtue of their many adjustments and doo-dads which, to the experienced photographer, make it possible to do all manner of tricks. Photography, like every other endeavor, should be attacked in a gradual and progressive manner. The simple box camera, because of its simplicity in operation, is by all odds the best camera for one who has never had a camera in his hands. From it he can learn the fundamentals and later earn the right to more extensive and costly equipment.

Eventually there comes a time in every amateur's life when he has to select a camera of the advanced type, which will enable him to express himself to the greatest degree. The choice of camera demands long and careful deliberation. Because photography is so far-flung and encircles so many subjects, it is to be expected that **no one camera can do everything!** The first thing to think about, then, is the kind of photography the amateur expects to indulge in mostly. If this matter is not carefully thought out, the wrong type of equipment can, and usually does, impose difficulties which soon cause the owner to give up in disgust.

In general, the popular types of cameras can be classified as follows: Simple box cameras, folding roll film cameras, folding cameras possessing a ground glass back and using film pack, cut film or plates, reflex cameras which permit focusing upon a ground glass, standard view cameras and, of course, miniature cameras.

For the amateur interested primarily in architectural subjects, a miniature camera would hardly do, and by the same token, candid camera work could hardly be successful with a view camera. Each type is best adapted for certain kinds of work, and should be chosen from that angle.

Because no one camera can do everything, it is to be expected that advanced photographers have several outfits of different types. An outfit consisting of a miniature camera, a folding "plate" camera and a reflex camera would constitute sufficient coverage for all ordinary purposes.

The matter of negative size is of greater importance than many would believe. It is generally conceded today that the $3\frac{1}{4} \times 4\frac{1}{4}$ inch size negative is just about ideal. It is small enough for economy and sufficiently large for all serious purposes and application of retouching and similar hand treatment. In other words, where only one camera is to be used, it should by all means produce negatives of $3\frac{1}{4} \times 4\frac{1}{4}$ inches (or 9×12 cm, which is roughly $3\frac{1}{2} \times 4\frac{3}{4}$ inches). It will be discovered that the vast majority of serious photographers use this size negative for the bulk of their work. So this matter of size cannot be underestimated.

The lens of the ideal camera should have a speed of $f:4.5$. While it is desirable to have greater speed at times, $f:4.5$ seems to take care of all ordinary work to perfection. Keeping in mind that faster lenses bring with them a new set of complications which often prevent the results desired, the $f:4.5$ lens seems to have earned its popularity throughout the years. The speed of our present-day emulsions would tend to reduce considerably the initial speed of the lens, so except for unusual conditions, the $f:4.5$ lens will be found adequate. Some lens manufacturers have never been able to produce better optics than their regular $f:4.5$ lens, and in many cases, their faster lenses are definitely inferior in quality to it.

The shutter also is something to think about. For average work, the standard Compur (between-the-lens) shutter with speeds as fast as $1/3000$ th second (in certain small cameras, Compur shutters are made to operate as high as $1/5000$ th second) will be found very satisfactory. But supposing that the photography of

swiftly moving objects is required . . . the Compur is hardly suitable owing to its limited range of fast exposures. We must then resort to the use of a focal plane shutter which provides speeds as high as $1/1,000$ th second. The ideal condition in a camera would be where both Compur and focal plane shutter are incorporated.

Many times it becomes desirable to photograph objects at close range. Most cameras will focus down to around 5, 4 and even 3 feet, but this is hardly enough for critical work where even closer distances are involved. Under such conditions, a ground glass back and extra bellows extension are indicated. These are mighty handy devices to have on a camera, particularly if it is the amateur's one and only.

Sensitive materials are available in such a vast array that the really versatile camera is made to accommodate most of them. General opinion favors film pack and cut film for all serious work, hence the camera should provide for these rather than roll film, which, while convenient, is obtainable only in certain types of emulsion which automatically eliminate many forms of photography which require different sensitive materials.

—Karl A. Barleben, Jr.

Pan K

● High speed Infra-Red Sensitive film liked by cameramen for filter and night effects.

Eastman's Pan K negative film, improved and refined to meet modern conditions, is meeting with great favor from a number of cameramen for scenes where unusual filter effect shots are desired or for producing night scenes in the daytime. The film is unusually fast, and combined with its high speed is extended Infra-Red sensitivity.

For use with this film in daylight, the No. 29 filter is recommended by the Eastman company. The film should, of course, not be used without filters and the use of any other than the No. 29 is deemed unnecessary, although the No. 25 and the No. 70 can be used. Depending on brightness of daylight and degree of night effect desired, the Pan K should be used at apertures from $f:3.5$ to $f:6.3$.

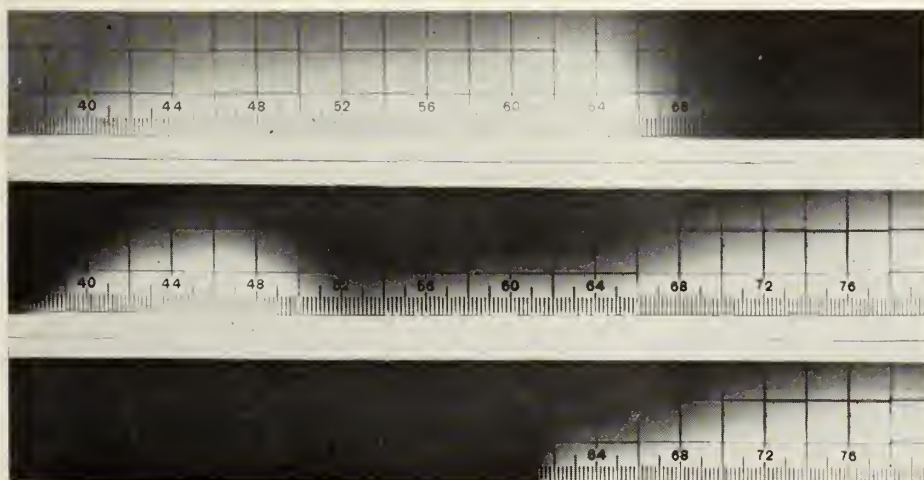
Accompanying spectrograms illustrate interesting comparisons on Pan K.

New Filmo 8

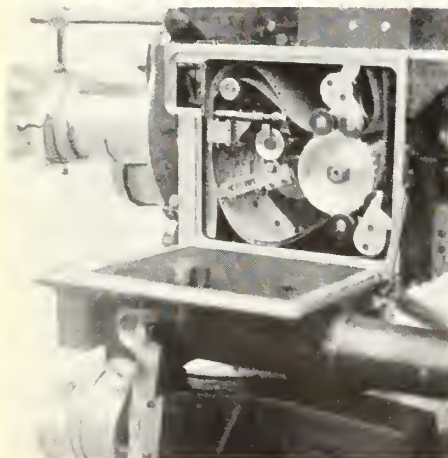
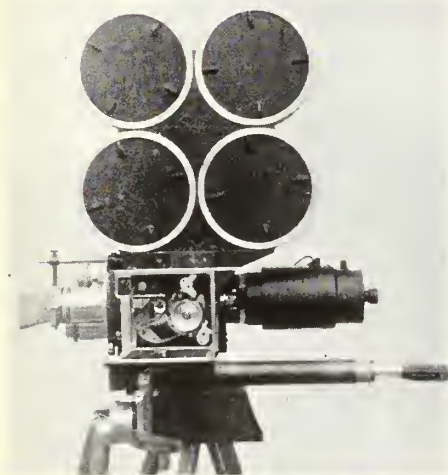
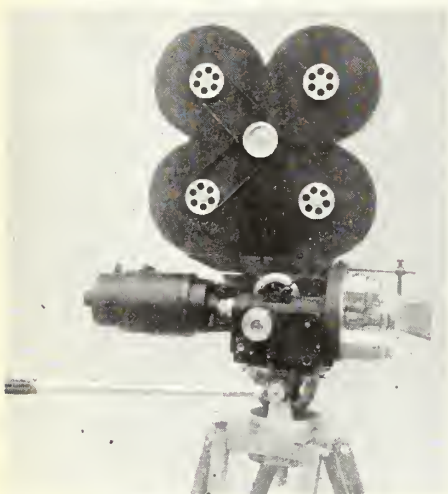
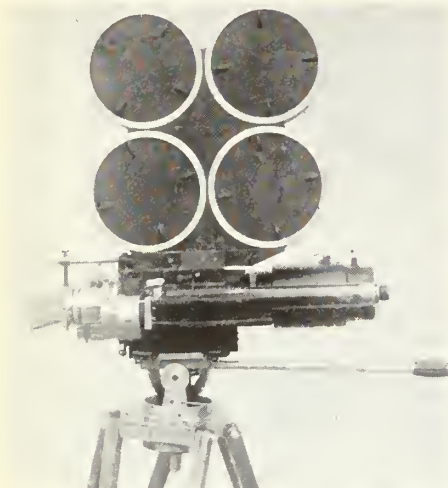
● B&H's streamlined palm-fitting motion picture camera features numerous improvements.

Bell & Howell's new 8 mm. camera is not only palm size, but it is palm fitting as well. Exploited as the Filmo Streamline 8 the newest Filmo is the same size as the original Double 8, which made 8 mm. history, and, as pictured herewith, its die-cast aluminum case is designed along modern flowing lines.

An important feature is the single-



Spectrograms of: (1) Eastman Super X; (2) Eastman's high speed Infra-Red Sensitive Pan K negative, not filtered; (3) Pan K filtered with No. 29 filter.



New Streamlined Filmo 8.

frame device, a mechanism which permits the user of 8 mm. film to enjoy animation work. With this camera a traveler will be able to photograph maps of his wanderings, with the course of his journey extending itself, dot by dot, from one city to another. It is possible to make motion pictures of jointed dolls and animals, toys in action and similar stunt effects.

A new exposure guide is built into the camera, and permits quicker light readings. Choice of two speed ranges is available, 8-16-24-32 and 16-32-48-64 frames per second.

The lens is a Taylor-Hobson 12 1/2 mm. F:2.5, fully corrected for both black-and-white and natural color film and, as is the case with all cameras made by Bell & Howell, it is instantly interchangeable with an almost unlimited selection of other lenses. The 1-inch and 1 1/2-inch lenses are mounted directly for the Streamline 8, and the camera is equipped with two viewfinder masks outlining the exact fields encompassed by these lenses. In addition, an adapter makes possible use on this camera of any lens supplied for the Filmo 70 line of instruments.

The Streamline 8 retains the same sturdy and accurate mechanism which powers previous Double 8's. Threading accomplished by attaching the end of the double-width film to the take-up spool end, without threading any sprockets at all, dropping both spools on their spindles with the film passing through the gate. When the camera door is closed the gate is automatically closed and the accurate, gear-driven footage dial is set at the starting position.

Before the motor runs down to the extent that there no longer is sufficient power to move the film at a constant speed, power is automatically cut off, thus insuring uniform exposure from the beginning of the run to the end. End-fog is at a minimum in the Streamline 8, because when all film has been

run onto the take-up spool, the very end of the film remains taut in the gate, preventing the exposed film from spiralling loose on the take-up spool and becoming light-struck.

Four shots of the new Duplex camera:
Top: Camera in shooting setup; **Second:** View from right side showing central hand shutter dissolve; **Third:** With door open showing interior position while threading; **Bottom:** Closeup of two films in camera and anti-buckling device of an effective design.

Duplex Camera

● **First models of new Carleton Brothers' instrument now being tested and improved.**

First models of the new Duplex camera (International Photographer, March, 1937) now are completed and going through intensive tests in actual shooting performance before manufacturing begins. A number of improvements and minor changes in appearance have been made since the latest product of the Carleton Brothers was first announced. The camera is intended for professional production use in studio, news-reel, expedition and commercial work and is developed with special attention to the needs of color photography.

The entire aperture assembly may be removed for cleaning by taking out one screw; and direct focusing is accomplished by shifting a small lever which gives the operator a correct, right side up, magnified picture so that it may be done quickly and accurately. The lever is then moved back into normal position and that consists of "racking over." Other features are pilot pin registration and pressure pad, buckle switch and reset, large shutter opening which is hand dissolving, and easy operation.

The new Duplex camera's magazines incorporate a new style light trap which opens when the camera door is closed, and which automatically closes again when the camera door is reopened. This insures a fog-proof magazine without any possible injury to the film without the need of any cloth or velvet lining.

More Kodaks

● **Eastman announces new Senior Six-16, Six-20 Models with new improved shutter release.**

On the heels of May announcements of a new series of Junior Kodaks and a new 3A model, Eastman last month popped forth with another improved series, the new Kodak Seniors.

Added models are the Kodak Seniors Six-16 and Six-20 with either Kodak Bimat or Kodak Anastigmat f:6.3 lens. These two models replace the former Kodaks Six-16 and Six-20. Both are equipped with Kodak shutters having 1/25, 1/50 and 1/100 second shutter speeds, time and bulb actions.

Also there is the new Kodak Senior Six-20 and Kodak Senior Six-16 equipped with the Kodak Anastigmat lens f:4.5 with Kodamatic shutter. Aside from differences in lens and shutter equipment, the general design and construction of Kodak Senior f:4.5 is the same as the Kodak Seniors referred to above. In addition to the faster lens, the Kodak Senior f:4.5 has a top shutter speed of 1/200 of a second compared with 1/100 second on the other

NEW TOOLS


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Senior models.

Chief feature of the new models is the new shutter release located on the body of the camera. Because of this change in design, waist level finder is no longer needed. Now picture takers, holding the Senior firmly in both hands and sighting through the new optical direct-view eye-level finder, can release the shutter with the touch of the finger. This new technique not only gets the picture from eye-level, but, in addition, minimizes camera movement and makes it easy to click the shutter the instant the scene is "right."

The optical eye-level finder also makes for quicker, more accurate sighting and is especially helpful when following moving objects. The regular trigger shutter release is retained and may be used if desired for either snapshots or time exposures.

Kodak Seniors are covered with black pig-grain Kodadur. The action front opens with slight pressure on the push-button bed latch, and the bed may then be pulled down until it locks in position. Light pressure on the one-finger bed release—another new and convenient feature—allows the bed to be snapped shut in one simple motion.

Machined bed braces, modern in design, and finished in black enamel and buffed chromium, add to the appearance of the Seniors besides assuring sturdy support for the lens and shutter assembly. Another improvement that lends distinction to the new Kodaks is the knurled film-winding knob. Easy to grip, it facilitates winding the film after each exposure is made.

The Six-20 and Six-16, with Bimat lens, retail at \$16 and \$17.50 respectively. The Six-20 and Six-16 f:6.3 Seniors are \$19.50 and \$22 respectively. The Kodak Seniors Six-20 and Six-16 with f:4.5 lens retail at \$29.50 and \$33.50.

Polarator

● New device to insure maximum polarization efficiency with the Marks Plate now available.

A new and cleverly constructed device, which enables accurate adjustment of the Marks Polarization Plate to any still or motion picture camera at the correct angle of its maximum polarization efficiency, is now being offered to the trade by Kin-O-Lux, Inc.

Operation of this device, which is essential in photographing many scenes of glass, water, clouds, etc., to eliminate glare and reflection and to secure greater contrast and photographic values, has been dependent on the operator's judgment. The makers believe they have worked out a method which now insures accurate setting of the Polarization Plate disc.

The Polarator device consists of two metal rings. One has a revolving inner ring within a stationary ring or flange. The plate is fixed permanently in the inner-ring. In operation, the inner ring is rotated, while observing through the eye, until maximum polarization is achieved which is indicated by an en-



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graved guide line. A similar ring is attached to the camera lens. It also has an engraved notched line. As it is adjusted to the lens, the notched line should be centered at its highest point. The smaller ring is inserted in the unit attached to the camera and certain maximum effect is assured when the two engraved lines coincide.

This attachment, of course, is not essential for reflecting or ground glass cameras, since the maximum polarization effect can be readily discerned on the ground glass. Complete details will be furnished by the distributors on application and the device now is available at many camera shops.

New Mexican Restrictions

The Mexican government now requires an authorization for exports or a certificate of censorship before motion picture films, exposed or unexposed, can be taken out of the country, the Department of Commerce reports. Permission must be obtained from the Autonomous Department of Publicity and Propaganda and all custom houses have been instructed to enforce this rule rigidly, the report states.

The regulation applies to private citizens, traveling across Mexican boundaries as well as to companies organized for the commercial production of films. Tourists taking motion picture films into Mexico should remember that they will be required to obtain the necessary permits before they can bring in or take out such films.

From Lab to Acting Contracts

From Paramount's lab to Paramount's contract player list via roles in the studio little theatre productions is the hop taken by Archie Twitchell. He got plenty of kidding when he turned thespian but stuck it out to do a portrayal of "Herbert White," studio press agent in Norman Krasna's Hollywood satire, "Louder, Please," that was good enough to win him an acting chance. Twitchell joins Lynn Bailey, print inspector at the Paramount lab, who has a featured role currently in Paramount's "Artists and Models." Both are members of IATSE Local 683.

8 mm. Exclusively

Film Specialties, P. O. Box 111, El Monte, California, a direct mail order house, dealing exclusively in 8 mm. motion picture products, has issued a new catalog of special interest to 8 mm. movie makers. Together with a listing of both "Straight" 8 and "double" 8 equipment and services, special "Get-Acquainted" offers are announced. Introductory packages include 8 mm. titling film, chemicals, decorated "The End" titles, etc. Of special interest is the Elite Amateur Motion Picture Title outfit, for making printed titles for use in small titling boards.

Careless Threading

Movie cameras as a rule are fine pieces of mechanism that do their work well. That there are occasional rolls of spoiled film is mainly due to careless threading by the camera's user, with consequent loss of loop and blurred pictures. Thread your movie camera with utmost care, check the lacing by

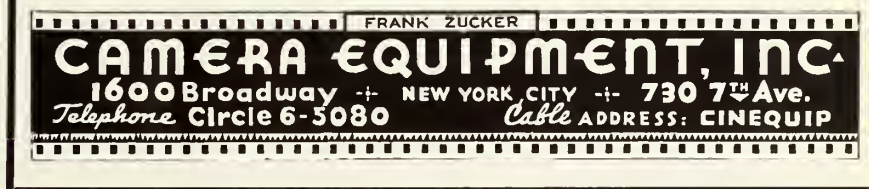


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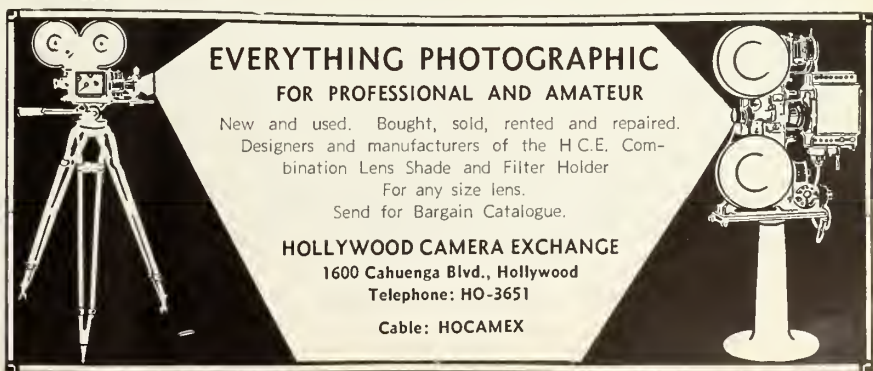


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running off a bit of film before replacing the camera cover, and you're not likely to meet with disappointment.

Newly Processed Film

While the film you receive back from the processing laboratory is perfectly dry, nevertheless it is in a state de-

scribed by lab men as "green." Preferably, one should not project the film until it has had a few days' time in which "to set," since "green" film is susceptible to scratches if projected immediately after processing. If, on the other hand, the enthusiastic movie maker cannot refrain from screening

the new film, then by all means see that your projector is scrupulously clean and that the path of the film through the machine is entirely free from any foreign matter, such as hardened bits of emulsion and dirt particles which might affect the delicate, unseasoned film.



People

Roy Del Ruth (top left) ace director, watches intently during production on "Broadway Melody" at MGM; (center) Milt Gold snaps himself, via partly discernible cable, with Gregory Ratoff and Sir Harry Lander at 20th-Fox; (right) complicated technical setup for Franchot Tone to enact a tense scene as surgeon in "Between Two Women," MGM; (bottom

right) a trick truck shot of Wayne Morris and Gloria Dixon for Warners' "Submarine D-1"; (center) picture youngsters must study regularly and Melba Campbell is one of the teachers supplied by the Los Angeles Board of Education to school-marm the tots; (left) Eddie Burke, RKO-Radio's busy studio entrance policeman in snappy new uniforms adopted for the studio's force a few weeks ago.



LONG, LONG AGO. Two rare stills of production in "the good old days." Ernest Palmer and John M. Stahl (right) are busy getting the best out of the Shirley Temple of the day; (right) a masterpiece of old time directorial enthus-

iasm as Clifton King demonstrates the coach's croch in spurring on May McAvoy and Wyndham Standing to greater emoting. Wyndham is registering that he's tired of it all. Old-time stills are from collection gathered by Henry Kruse.

Title Types

Selection of a satisfactory type face for use in making motion picture titles calls for careful attention by amateur cine title-makers. While a seemingly unending choice of type-faces is avail-

able and many look well on a printed page, some are unsuited to the requirements of cinematography. Type with hair-line construction is not satisfactory for movie titles. Titles made with it will melt into the background and are next to impossible to read when pro-

jected. Remember, contrast is essential in title work. Choose a type-face that is very bold, one with strong character. Best procedure is to make some title tests, using the type-faces that you favor, and thus learn first-hand how they will reproduce on the screen.

New Faces

Marion Claire (left) NBC singing star now under

contract to Sol Lesser and (center) Oskar Homolka, European star, pacted by Paramount, gets on the same train with Frank Tuttle, Paramount director, for his featured role in the Technicolor feature, "Ebbtide."



Rod La Rocque, not a new face to the screen, but making a comeback after an absence of several years as "The Shadow" for Grand National.



Sandra Storm, visiting English girl, won a Paramount acting contract, when she was discovered one night recently at the Cocoanut Grove by Producer Lew Gensler of "Artists and Models" and his six artist stars, Peter Arno, McClelland Barclay, Arthur William Brown, Rube Goldberg, John La Gatta and Russell Patterson.

Lowe, Hite and Stanley, make their bow to film fans with their knock-about comedy antics in R K O - Radio's "New Faces," while the two naughty youngsters in the corner are the industry's pair of "screen twins," who look alike though not related. Their names are Joan Howard and Joan Breslau.

Process

A New Section in Photographer • Teague • RKO-Radio Department



ELEMENTARY. Production still of one of the simplest forms of process photography. Director Roy Del Ruth and his production aides, headed by Cameraman Bill Daniels are photographing Eleanor Powell in a sylvan setting on a sound stage, with a painted background bringing the outdoors indoors. Material is stretched on canvas, on which scenic artists have skillfully recreated an authentic and realistic exterior scene. Skillful lighting, composition and photography will produce a scene on the screen that will have all the appearance of the real thing.

Teague

● Process expert equipping a new studio to give film trick technique service to advertising field.

Opening up a wide new field for sensational effects in printed matter, George Teague, ace process expert, is equipping a studio in Hollywood to offer a complete special effects service, featuring the composite welding of backgrounds from all over the world to posed models for still pictures. Teague's move is an answer to many requests from the advertising field for the equivalent of motion picture processing of the highest calibre to lend appeal and variety to stills and printed reproductions.

Teague's new venture is in addition to his work as one of the busiest special effects service and manufacturing leaders in the industry. He also is increasing his facilities for this style of work, and is actively investigating all process angles with relation to color.

Hollywood's leader in the free-lance process field entered the industry in 1913 as assistant to the renowned Billy Bitzer, D. W. Griffith's photographic ace. Shortly after Teague developed



HENDRICKSON



PROJECTION BACKGROUND PHOTOGRAPHY, in scenes shot exclusively for International Photographer by Fred Hendrickson, Local 659. Scene above is a blow-up direct from film of one of a number of scenes taken. Note that the scene being photographed in large still did not print up well, whereas a scene in which Johnny Eckert, assistant, has taken off his coat, did print up. In large picture those identifiable are: Wm. Hanberry at projector; Jim Davis, grip, kneeling; Cliff Steiner and Eckert posing before screen; Guy Newhard, gaffer, in rear; Bill Williams, first cameraman, seated under camera; and James Vierna.

RAKO-Radio's camera effects department, headed by Verne Walker, is one of the most progressive in the industry. Walker and his executive superiors believe they secure the utmost efficiency through having the optical printing, matte shots, miniature, trick and background printing work functioning all under one office, since all these elements tie-in together in actual production service. From the days of the

spectacular "King Kong" to the current musical, "New Faces," the studio department has always been on its toes to supply outstanding service when camera effects were called for in scripts. Among recent pictures to which the department has made important contributions are: "Michael Strogoff," "Sea Devils," "Shall We Dance."

the rear projector transparency process at Fox, in '29 and '30, he went into the independent process service on his own with headquarters at the General Service Studio—the old Metropolitan lot—and has been there successfully since.

Starting with a Mascot serial, he has made transparency shots for most of Hollywood's leading independent production units as well as for the majors, including Harold Lloyd, Charles Chaplin, including the recent "Modern Times," London Films, including their spectacular "Things to Come," Walter Wanger, B. P. Schulberg, Emanuel Cohen's Major Pictures, Selznick International, Grand National and many others.

On a trip to London to install complete process equipment in the London Films studio, Teague's work and products made such an impression that other British lots became interested and had Teague equipment installed, including British & Dominions, Twickenham and the Joe Rock studios. The special film commission of the U.S.S.R., on its trip to Hollywood last year, also selected Teague equipment for the Russian industry's Hollywood, and in addition to extensive purchases invited Teague to supervise the installation in their Moscow and Leningrad studios.

In future issues of International Photographer, Mr. Teague will contribute articles on various phases of process work in motion picture production, both from the practical and theoretical aspects, a series which we are sure every sincere technician will await with considerable interest.

Photographic Bomb Practice

Live bombs for the Army Air Corps giant one-tonners cost up to \$750, so the Bombardment Units have devised ingenious instruments for bombing practice which achieve economy while providing a degree of training not possible a few years back. The substitute is a photographic trick, involving use of a "camera obscura," consisting of a portable hut mounted on a four-wheel trailer containing two-way radio apparatus. Into the roof of this hut is fitted one of the largest photographic type lenses ever designed by the Bausch & Lomb Optical Company, produced at a cost of approximately \$1,500. The lens has a diameter of 9 1/4 inches with an equivalent focal length of 168 inches and a relative aperture of f:18. It projects the image of the bomber on a large chart on the floor of the hut. The chart room, about four feet square, is light proof. In it the scorer traces the path of the student planes and records the hits and misses.

Kershner Back

After roaming over half the globe with camera and typewriter, while writing four full-length novels as well as some 30 short stories, Glenn R. Kershner, member of Local 659, IATSE, is returning to his first love, the camera, and will devote his entire time to cinematography, while his many stories are being read in Hollywood and by publishers of the east. Kershner, one of the original members of Local 659, stopped all work four years ago to satisfy a long-time hankering for authoring.

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Sound

Light Boom

● new Mole-Richardson boom and perambulator unit works in closest quarters; has many improvements

Even microphone booms are going modernistic. Latest item to emerge from the Mole-Richardson shops is a streamlined microphone perambulator surmounted by a completely new, lightweight mike-boom. Tested on production in several major studios, the first of the new devices is to go into use at Paramount and General Service Studios.

The boom itself is definitely in the lightweight class. Compared to standard booms of equal size which tip the scales at a good heavyweight's average of 190 pounds, the new device, complete with counterweights, weighs but 86 pounds. It is constructed entirely of duralumin. Due to the lighter construction, the counterweight is necessarily lighter. These counterweights are quickly removable; weigh 26 pounds, and when removed reduce the weight of the boom to 60 pounds, which can easily be handled by one man. The counterweight takes the form of a cast iron box with an easily removable cover. Inside this box additional weights may be fastened to enable the boom to be counterbalanced accurately to microphones and attachments of various weights.

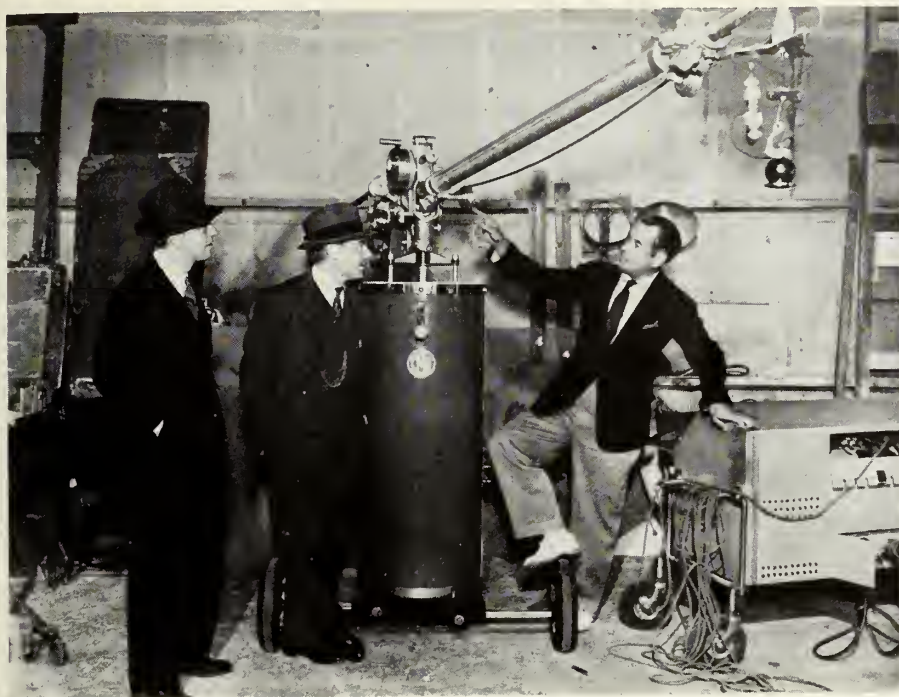
The mike is extended into the set by the usual telescopic extension tubular arm. Control of the boom's extension is by the usual windlass and cable, while the microphone may be rotated, panned and tilted by means of a conveniently placed, rubber-covered tubular grip which parallels the entire inner end of the boom.

Details of the construction of the new boom, however, are radically different from conventional practice. In the old-style boom the telescoping arm was carried inside the fixed arm, supported at the outer end on a roller, and at the inner end by a piston-like, leather pump-washer. In operation, this produced a scraping, sucking noise which, while slight, was sufficient to be objectionable.

In the new boom, silent operation is assured by an entirely new design. The telescoping arm rides entirely on rolling members, for it is supported and held in alignment by silent rubber rollers at several points, the rollers being provided with self-lubricating bearers. This assures permanently noiseless operation.

Lighter weight of the boom assembly has permitted designers to eliminate metallic cable normally used to operate the extension mechanism, and to substitute specially made textile cable of unusually high tensile strength.

The rolling carriage or perambulator upon which the boom is carried is another departure in the design of microphone supports. Looking like a streamlined cross between a filling-station and



HENDERSON

New Mole-Richardson light mike boom and perambulator is explained by Sound-Recorder Walter Oberst to Director Alexander Hall and Charles Ruggles.

a Roman chariot, it is carried upon three pneumatic-tired wheels. A short tiller-handle fixed to the steerable third wheel serves both as a handle for guiding the dolly's movements, as a brake, and as a convenient step to the operating platform. When the handle is swung upward a toggle-action brake is ap-

plied to the tire. This has sufficient force to lock the wheel motionless when it is desired to "tie off" the dolly in any position. When the handle is lowered into normal pulling position, the brake automatically releases. When the handle is raised, two metal steps are provided in it for mounting to the

operating platform. The steerable wheel may be locked by means of a set-screw like those on lamp stands.

The two other wheels are mounted on extensible stub axles. They may be extended more than two feet on either side, giving a firm foundation for the boom.

With the wheels retracted and the edge sections of the large operating platform folded downward, the unit will pass easily through a 30-inch door.

Chassis of the dolly is of conventional steel tube construction, reinforced by the stressed-skin monocoque of the streamlining. Above the two forward wheels is a crank-operated hoist which may be elevated to over nine feet above the stage floor and its operating platform carried with it. The truss-bracing used assures that the boom and platform will be rigidly steady at any height, and with the boom extended in any direction. This bracing is housed behind a neat, sheet-metal shield. A generous operating platform is provided for the boom operator, allowing ample working space regardless of the angle at which the boom is extended. As has been mentioned, the edges of this platform fold downward to permit the perambulator to pass through a 30-inch door.

The boom unit is so designed that it may if desired be used on any standard microphone boom support, while the perambulator would carry a conventional microphone boom. The two new components, however, are designed primarily for use with each other, and together they form an inherently new unit which should greatly increase the mobility demanded of today's sound pick-up equipment.

Laboratory

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Toning Clicks

• Zanuck adopts sepia processing developed by Nickolaus for MGM on Shirley Temple picture.

MGM's toning process, developed by the laboratory department, headed by John Nickolaus, which was used with great success for "Good Earth" and "Maytime," (International Photographer, April, 1937) has attracted the attention of executives of other studios. Darryl Zanuck was so interested that "Wee Willie Winkie," latest 20th Century-Fox starrer, was given the sepia effect toning treatment for its key city premieres.

Through the cooperation of MGM executives, Nickolaus' department toned a half-dozen prints of the 20th feature, which were used as samples for the benefit of the eastern DeLuxe lab, which processed the 20th release prints. The toning drew much favorable critical comment in its Los Angeles premiere

late last month at the Carthay Circle theatre.

Several months' continued experimenting with the toning process has convinced Nickolaus that it is invaluable in improving the visual quality of pictures. He now has secured after considerable effort a sufficient supply of the necessary chemicals and dyes, plus refinement of the equipment first used, and the latest MGM film to benefit from a spectacular dance sequence subjected to the toning process is the currently released Marx Brothers' film, "A Day at the Races."

Color Stills

• Slants on making paper prints with three color separation negatives from Kodachrome.

In a previous issue we discussed how 16 and 35 mm. Kodachrome is processed. The 16 mm. Kodachrome is ready for use as returned from the processing station, being limited, of course, to 16

mm. motion picture projection.

This, however, is not the case with the 35 mm. film. It is suitable for still projection as is, or each frame may be cut out and masked and framed for projection. Besides serving for still projection, a set of three color separation negatives can be made from each frame. These negatives, when properly masked, are suitable for making prints on paper via the Wash Off Relief—Duxachrome—Chromatone—Carbro or other process. They are then also suitable for Photo Engraving—Offset Photolithography and Photogravure.

Fairly decent results in making paper prints by any one of the known methods can be accomplished from just a set of separation negatives made through Wrattan filters—No. 29 (Red), No. 61 (Green) and No. 49 (Blue).

However, for anything approaching facsimile results, it is necessary that the separations be exposed and developed for a given density range and masking is essential.

The main reason why color correction is required to produce satisfactory results is that synthetic pigments, although much better than natural pig-

● a beautiful
negative and
fine prints reveal
... picture value.



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ments, are not yet sufficiently pure in color. The best dyes and process inks do not sufficiently absorb the colors they should absorb and do not reflect sufficiently the colors they should reflect.

If dyes and inks were available that were nearly perfect, masking would not be necessary and good results could be obtained from a set of properly balanced separation negatives.

In order to determine the density range of a negative a gray scale (a film density strip) must be mounted along side the Kodachrome transparency at the time of making the exposure.

After the negative has been developed, fixed, washed and dried, the density of the gray scale should be read on an Eastman Reflection and Transmission Densitometer. The difference between lowest reading on the scale and the highest reading on the scale will be the density range of the negative.

In the Eastman Kodak Company's booklet, "The Modern Masking Method of Correct Color Reproduction," can be found definitely established density ranges for both the separation negatives and positive masks for the process you wish to use.

Don Hooper, Local 683, IATSE

From Eastman

● **New fine grain duplicating positive and negative film attracts interest after SMPE showing.**

Interest in the new Eastman fine grain duplicating positive and negative films has been greatly stimulated in camera and lab circles, since their demonstration at last month's SMPE convention in Hollywood. The emulsions now are available to the trade although at present only a few laboratories are sufficiently acquainted with their characteristics to make use of them with complete confidence for actual production.

One significant feature of these films is their value in protection against loss through damage to the original negative. Another is the saving in duty on film intended for exhibition in foreign countries by shipping in the form of composite dupe negatives. From the standpoint of quality and graininess very satisfactory results have been achieved in making duplicates.

Those who have already seen film in these new emulsions report that comparisons of the originals and dupes on the new film shows it is very difficult to distinguish between them.

Pertinent technical and trade facts on the two new Eastman films follow:

**Fine Grain Duplicating Positive
(Code No. 1365):**

A yellow dyed positive emulsion of medium contrast coated on a clear base;

About 1/20th the speed of regular black and white positive film;

Requires special printer setup consisting of approximately a 250 watt lamp run at 110 volts with a printer speed of approximately 15 feet per minute;

Requires development in a D-76 Bo-

rax developer of about half strength;

Desirable gamma range: 1.00 to 1.50; price, \$.015 per foot.

**Fine Grain Duplicating Negative
(Code No. 1203):**

A low contrast panchromatic emulsion coated on a gray base of the same type as used for other negative film;

About half the speed of the regular Duplicating Negative, hence requires no special printer change;

Requires development in a D-76 Bo-

rax developer of about half strength; price, \$.04 per foot.

Vaporate

● **Bell & Howell offers amateur producers service for prolonging film life used by majors.**

Bell & Howell has installed complete equipment for applying the Peerless Vaporate Treatment for prolonging the life of film which is ready for the projector. Special machinery has been set up in the company's main office and manufacturing plant in Chicago, and the Vaporate service now is available to movie makers throughout the country through B&H's net-work of authorized dealers.

Adoption of the Vaporate treatment by United Artists, 20th Century-Fox, and other major Hollywood studios had already placed upon it the stamp of professional approval. Results of B&H's own exhaustive tests were convincing, proving that beyond all doubt amateurs who wish to take extra precautions to preserve their films for the years to come will do well to have them subjected to this treatment.

The film is made tougher by the Vaporate processing, yet retains its pliability. It is made impervious, yet it is lubricated externally. Its melting point is many degrees higher. It is protected against heat, climatic action, abrasion, and excessive moisture.

The treatment may be applied to Kodachrome film as well as to black-and-white and, since this color film is more susceptible to excessive moisture than is black-and-white, Vaporate is particularly recommended for Kodachrome. Treatment in no way affects the quality or bonding properties of splices made after treatment.

Cost of the new service for either Kodachrome or black-and-white film is quite low, \$1.50 per 400-foot reel of 16 mm. film and \$1.25 per 200-foot reel of 8 mm. film.

International Biz Jumps

International Cinema, Inc., is now busy on its new deal to handle 65 Grand National productions on a contract covering the next 12 months. The lab organization expects to handle over 35,000,000 feet of film for GN under the new contract. This deal, along with other new business, has International Cinema set for an estimated gross business of \$750,000 for the 1937-38 season, compared to the \$253,000 gross of the past fiscal year.

Lighting-Sets

RKO's Portable Unit • Second in Series on Branches of Local 37



Earl Miller, chief of RKO-Radio's electrical department, demonstrates new booster trailer for location lights to Lucille Ball (left); (center) the new unit setup for a run; (right)

Miss Ball and Harriet Hilliard, another studio contract player, coyly inspect the new trailer for the benefit of Emmett Schoenbaum, Local 659, who photographed these shots.

Location Light

● RKO-Radio's booster trailer, specially designed, features portability and efficiency.

Latest efficiency device at the RKO Radio lot is a two and one-half ton booster trailer to carry booster lighting equipment. It was specially designed by Earl Miller, chief of the electrical division. The two-wheeled vehicle cost approximately \$400 to build and is adaptable for any ordinary booster location.

The trailer can be attached to a truck carrying a Lincoln generator, and is capable of an amperage of six to seven hundred. Special tool boxes and compartments for carrying extra globes, wire and other accessories are constructed under the chassis. The trailer measures 12 feet in length, is eight feet wide and has a capacity of 5,000 pounds.

Miniatures

● Second in series on departments of Local 37. Small scale reproduction invaluable in films.

Generally referred to as miniatures, small scale reproductions of any city, locale, object or imaginative concept are turned out with realistic accuracy for film production purposes by the miniature builders of Hollywood's studios. Their work is a frequent and important contribution to production and well-deserved tribute must be paid to the members of IATSE Studio Local 37, who specialize in this work, for

to them is due considerable credit for the wealth of impressive scenes in many productions.

No end of research is necessary in planning and designing miniatures for the motion picture camera to assure their authenticity and proper perspective proportions for photographic purposes. This is the work of other departments, although miniature makers frequently collaborate with art directors and designers in shaping ideas. Their real work, however, begins with the actual construction of the miniatures and it requires painstaking care, plus skill born of years of experience to do their job well.

The usual scale of building miniatures

for motion picture work is one-forty-eighth the size of the original objects. Landscapes, buildings, entire cities, train wreck scenes, floods, fires, earthquakes; these are but a few of the reproductions possible with intelligent miniature work. Accompanying illustrations give a clear idea of the varied uses of miniatures in the studios. Particularly valuable are they in filming lavish musical pictures, productions with a foreign setting, or any picture calling for imaginative, historical or modernistic backgrounds.

It being obviously impossible to transport an entire movie company, for example, to Tibet for the filming of a picture; the studio assigns the minia-



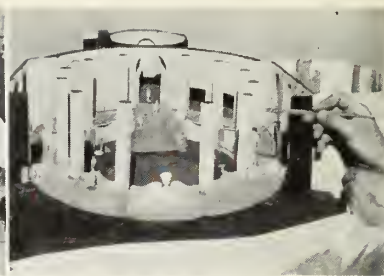
The entire city of London is recreated with authenticity and realism in miniature set for picture purposes by Local 37 members at 20th-Fox lot.



MORRISON



ESTABROOK



MAUPIN



ture department to construct the wanted landscapes, mountains or villages, and Tibet is virtually transported to Hollywood.

Constructed so it may be shot from many angles, a single miniature set may provide the background for a hundred or more scenes, and in many instances it is filmed in its entirety merely to be filed away for possible future use in another production by projection process methods. Thus it is possible to provide a bird's-eye view of London, Shanghai or primitive jungles at a moment's notice for a later film when only brief flashes are needed.

Another important purpose for which many miniatures are made that never reach the screen, is visualization of specific possibilities and problems of complex setting by the production executive, director, cameramen and other creators. Especially for scenes of wide scope such as musical numbers, spectacular dramatic mob scenes and even for ordinary settings involving complicated scenario action, are such miniatures valuable.

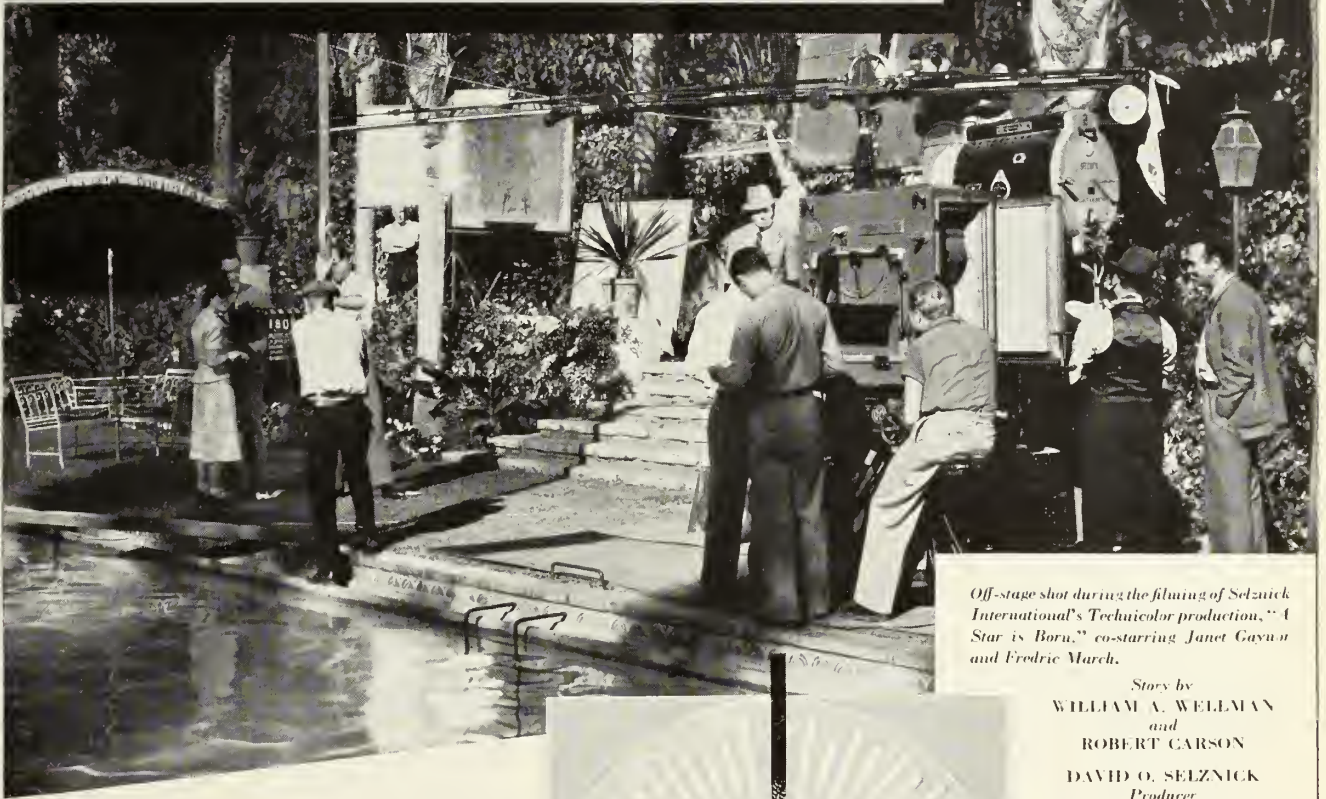
Used principally in early motion picture days to portray train-wrecks, fires, the crashing of high trestles, or a cowboy and his horse hurtling over a canyon, the use of miniatures has spread as picture making progressed to reproducing any imaginable scene or locale.

Through constant study and experimenting of technical genius in all departments of studio "back-lots" the writers and directors no longer are limited by ordinary restrictions.

Illustrating the work of Hollywood's miniature makers: Top strip shows (right) a mob scene for Paramount's "Last Train for Madrid," with miniature background of Spanish roof-tops creating the illusion of reality; (middle) two scenes of John Harkrider and the workers who carry out his art direction designs at Universal into miniatures for spectacular musicals such as "Top of the Town"; (left) the miniature model of the big set in 20th-Fox's "Cafe Metropole," used by creative workers to visualize final shooting arrangements. The two large cuts are shots of one of the most gigantic miniature sets ever built for a motion picture, New York of the 1930's as visualized for the 20th-Fox production, "Just Imagine," produced in 1930. This miniature re-creation of an imaginative concept of a future metropolis was constructed at a cost of over \$200,000 and for production purposes featured miniature people, motor cars, planes and helicopters in action.



Composition



Off-stage shot during the filming of Selznick International's Technicolor production, "A Star is Born," co-starring Janet Gaynor and Fredric March.

Story by
WILLIAM A. WELLMAN
and
ROBERT CARSON
DAVID O. SELZNICK
Producer
WILLIAM A. WELLMAN
Director
HOWARD GREENE
Photographer
W. OETTEL
Studio Chief Electrician

CARBON ARC LIGHTING

The art of composition has been an important factor contributing to the high standards which motion picture production has attained. This art includes careful consideration of lighting as one of its most important features. The studied attention given to light composition is evident in the outstanding pictures of the year.

The Carbon Arc lends itself perfectly to all requirements of motion picture production, as in this outdoor setting from "A Star is Born," taken on a beautiful Beverly Hills estate. Carbon arcs provide illumination surpassing sunlight in brilliancy yet blending perfectly in color quality. This daylight quality assures full range of gradation and pleasing softness without flatness or loss of realistic modeling.

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- It is silent, cool and remarkably fast.
- It has the photographic qualities of daylight.
- It has proved a necessity for color productions.
- It improves black and white photography.

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The accompanying photograph of an air view of London, created on a lavish and detailed scale at 20th Century-Fox, is a good example of the wide scope covered in building miniatures, particularly when compared with the exterior effects illustrated herewith for scenes in a Paramount picture with a Spanish locale and the models for an impressive night club sets in Universal and 20th-Fox pictures.

From huge exterior scenes to little flashes in a small corner of a close-up scene, miniatures demand careful planning of every detail, skillful and accurate carrying out of the idea that in many cases requires weeks of almost microscopically accurate construction. No pains are spared to attain an effect that is as close to reality as the real thing.

When ready to be filmed, such sets are carefully coordinated with action that may occur in natural sized settings. In the case of a large city and great exterior effects the settings are backed up with a cyclorama and lighted with special care before photography begins.

Miniature pedestrians, autos, trolley-cars or aircraft may be added; a fire may break out in some part of the city, an airplane crash or exploding bombs may be called for in the script—whatever the desired action or incident, it can be added to the original perfect reproduction of London.

One of the most expensive and elaborate miniatures ever constructed for motion pictures was the modernistic New York of the future as built by Fox Films for the picture "Just Imagine," in 1930. The city was constructed at a cost estimated at \$200,000 or more

in a dirigible hangar near Pasadena. It covered a plot of 75 by 225 feet in area. The tallest buildings were 40 feet in height, and represented structures 200 stories high. The illusion was established without any stretch of imagination on the part of the viewer of the finished picture. Nine levels for subway and elevated trains, connecting bridges between skyscrapers, helicopters, dirigibles and airplanes discharging passengers at any building level, buildings and streets well-lighted, every minute detail of the modernistic city was perfectly constructed, and when first flashed on the screen was greeted with enthusiastic applause, a well-deserved tribute to the work of the builders.

Embracing as it does many of the more important technical divisions of studio work, Local 37 is especially proud of the men who compose the miniature-building department. A brief glimpse of war-torn Spain on the screen may have entailed months of preparation and the expenditure of many thousands of dollars, yet if the magnitude and startling reality of the setting amazes you, it's ten to one it's a miniature. Common sense may tell you that it would be impossible to photograph what you are really seeing, but the fact that you have been startlingly surprised and dramatically satisfied is in itself a tribute to the art of miniature building. Screen credit to the men responsible for these reproductions is forthcoming in many film productions, and deserved in many others, for sustained illusion plays a great part in the success of motion pictures, and the miniature builders of Local 37 are adept in the art of illusion.

Merrill F. Hanna, Local 37, IATSE

Projection

ARC Activity • Symposium • Film End Warner

Acad Moves

● **Research Council offers a test reel and modifies its Standard Electrical Characteristic.**

The Academy Research Council early this month is making available to the industry a sound test reel for use in checking and maintaining adjustment of the sound projection systems in theatres.

It will contain a sample section of dialogue and music recording from each of the eight major studios and will be similar in make-up to the reel used by the ARC theatre standardization committee in tests which led to the adoption of the Standard Electrical Characteristic.

Prints of the reel are going to the sound equipment service companies, studios and theatre circuits. Other organizations concerned with the maintenance of sound quality in the theatre may submit requests for prints of the reel to Gordon S. Mitchell, manager of the Re-

search Council, 1217 Taft Bldg., Hollywood, California.

As a matter of policy, in order that copies of the test reel do not reach the hands of unauthorized individuals or organizations, it has been decided that each of these requests must be approved by the Research Council before prints of the reel will be delivered.

This test reel is the first sound recording test reel ever made available to the theatre, and should be of very great assistance to sound service men in adjusting the equipment to obtain optimum results from current studio recordings.

Coincident with the announcement in June of the new test reel ARC announced revision in the Standard Electrical Characteristic for Two-Way Reproducing Systems in Theatres (International Photographer, April, 1937). As a result of tests of new equipment made available to the industry at approximately the time of issuance of the specifications for the former Standard Electrical Characteristic on March 31, as well as of additional tests and further consideration of existing theatre horn

systems equipped with bakelite diaphragms, the Council has revised the standard covering the high frequency end of the characteristic for these bakelite diaphragm equipped systems.

Changes, which supersede the March 31, 1937, specifications, follow:

"The two-way reproducing systems for which this characteristic, indicated below and by the associated curve which is a part of these specifications, is recommended, are:

Type I—Mirrophonic system using 594-A mechanisms (loud speaking telephones) (metal diaphragm) and TA-4181-A low-frequency mechanisms (loud speaking telephones).

Type II—RCA system using MI-1435 (metal diaphragm) and MI-1432-A low-frequency mechanisms.

Type III—RCA Lansing equipped system using 284 (metal diaphragm) and 15X low-frequency mechanisms.

Type IV—RCA system using MI-1428-B (non-metallic diaphragm) and MI-1432-A low-frequency mechanisms.

Measurement Point: This characteristic is valid for measurements made at the output of the power amplifier, including the low-pass filter, with a resistance equivalent to the speaker load, using the Electrical Research Products, Inc., test film ED-20 (corrected). (The correction factor, printed on the back of the can in which this test film is furnished, indicates the deviation from constant percentage modulation for each frequency) or the RCA test film Catalogue No. 27637, and is subject to modifications to fit special acoustic conditions which no doubt exist in many theatres, due to the fact that the reverberation time or other acoustic characteristics are not optimum.

Gain-Frequency Characteristic: The following table indicates the characteristic for both the metal and non-metal-

lic types of diaphragms used on the high-frequency mechanisms:

Fre- quency	Metal Diaphragm Mechanisms	Non-metallic Diaphragm Mechanisms
50	—1 to —3*	—1 to —3
100	—½ to —1**	—½ to —1
200	0	0
1000	0	0
1500	0	0
2000	—¼	+ ½
3000	—1 ¼	+1
5000	—4 ½	+1
7000	—10 ½	—2 ½
8000	—18	—6

*For M-3 and M-4 Mirrophonic Systems, 50 Cycles, +1 to —1.

**For M-3 and M-4 Mirrophonic Systems, 100 Cycles, +½ to —½.

Tolerance: A tolerance of ± 1 db is specified for any of the above gain-frequency measurements.

Acoustic Correction: Whenever such conditions exist that this characteristic does not give satisfactory results, it is recommended that the acoustic characteristics of the auditorium be corrected.

Mechanism Adjustment: With the presently available equipment as specified, operating with the Standard Electrical Characteristic, it is necessary in some instances that the sensitivity of the high- and low-frequency band be relatively adjusted to obtain a flat acoustic response on both sides of the crossover. This adjustment usually takes the form of attenuating the high-frequency band by means of the taps in the dividing network to varying degrees from 0 to 5 db, depending upon the relative efficiency of both low- and high-frequency units and the specific acoustic properties of the auditorium involved.

Typical values are as follows:

ERPI—Mirrophonic system, attenuate the high-frequency band 2 to 4 db.

RCA—MI-1435 and MI-1432-A, attenuate the high-frequency band 0 to 2 db.

RCA—Lansing equipped, attenuate the high-frequency band 0 to 2 db.

RCA—MI-1428-B, MI-1432-A, attenuate the low-frequency band 0 to 2 db.

It should be remembered that the type and condition of screen used in the theatre will in a measure affect the high-frequency response of the reproducing system.

Symposium?

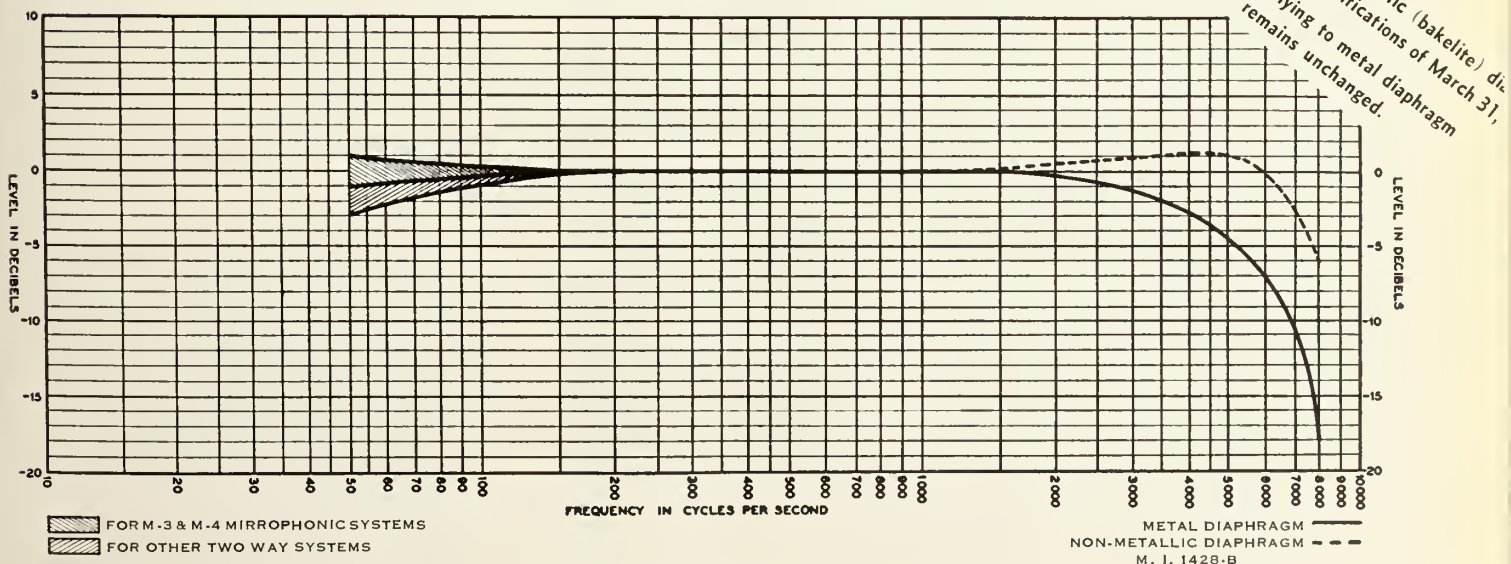
● From Local 150, IATSE, Los Angeles, comes starter for thorough projection practice discussion.

(The following comment by a member of Local 150, IATSE, Los Angeles, is self-explanatory. Views expressed are those of the author, not of International Photographer, but we heartily concur on the idea that a general airing of projection matters would be constructive. International Photographer welcomes further comment and articles from projectionists on any phase of the subject.—Ed.)

Comments of Brother M. H. C., Local 37, IATSE, in your May issue are provocative and reflect, I believe, the general sincere interest in continued improvement of projection practice by our organization's far-flung army of skilled projectionists. However, they undoubtedly will stimulate much contrary opinion from projectionists out on the firing line of the technical end of the industry. I am sure that there are scores who will agree with me that the problems involved have much less to do with the sincerity and professional enthusiasm of projectionists than with the

Standard Electrical Characteristic For Two Way Reproducing Systems in Theatres

Research Council
of the
Academy of Motion Picture Arts and Sciences
JUNE 8, 1937



Electrical Run

Measured at the Output of the Power Amplifier with a Resistance Equivalent to the Speaker Load
Using ERPI Test Film (ED-20, Corrected), or RCA Test Film (Catalogue No. 27637)

actual mechanical equipment in general use in theaters.

Whether we like to admit it or not, theaters are far behind the times in relation to progress being made in the studios in truly sensational modernization and extension of the equipment and technique of sound recording.

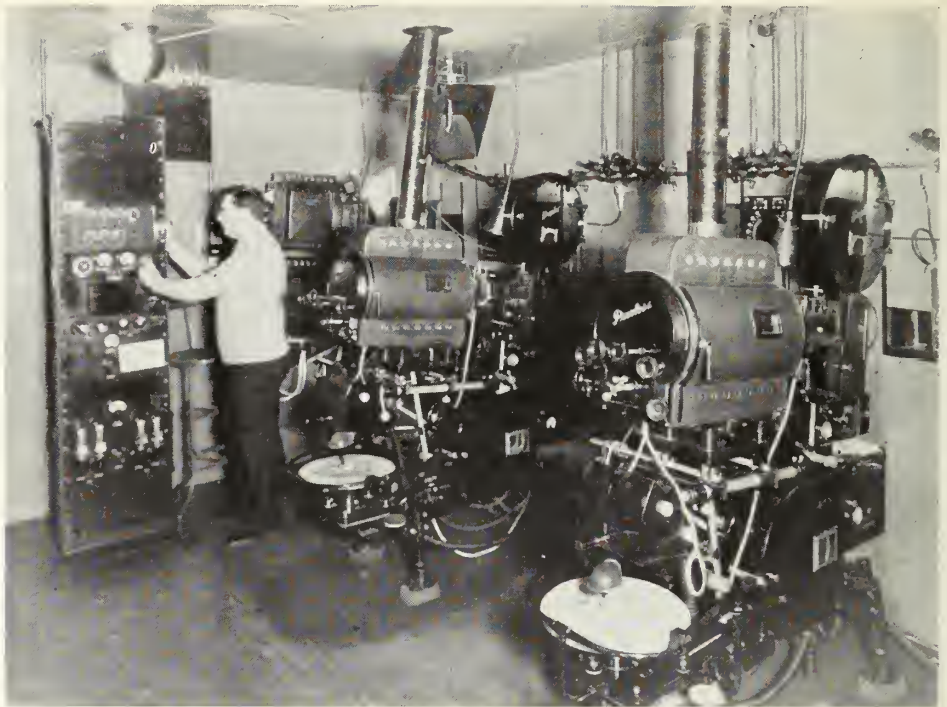
Probably one of the most constructive moves the International Photographer could make in serving the progress of the industry, particularly at the point where the product reaches the paying customer—on the theater screen—would be a thorough open forum airing of the entire situation. Undoubtedly there are hundreds of our members working in theaters throughout the country who are well-equipped to contribute practical and beneficial material on many phases of the situation.

Somebody has to start off such a program and I am suggesting for publication the following general discussion of a typical current booth, to be followed by ideas for the modernization and improvement of the equipment to bring it into harmony with the type of sound now being recorded in the studios.

Even at the present day, there are throughout the United States innumerable theatres (in name only) which have snappy exteriors and a few good seats, but beyond that there is nothing that would class it as a theatre! These are known as "hay wire dumps," if such a terminology be permissible, where people pay a good price to see a good picture, but do they?

You know they do not. Then there is the other type theatre, swanky all the way through, perfect projection equipment, best of pictures, and yet the sound is bad. Why? That is another situation worth serious discussion.

We are not hereby seeking to attempt to educate the managers, or the personnel of the various theatres; because it has been found that in quite a few instances the manager is a real showman, and knows his business; but it is hoped that through such a symposium as is suggested, International Photographer will be able to present thoroughly the things that can and cannot be done in



Paul R. Cramer, Local 150, Los Angeles, in typical theater projection room, which he suggests could well stand many improvements and modernizations.

the average projection room, as well as an understandable picture of the equipment that the projectionist must use to give the perfect entertainment from a technical standpoint that theaters should give as a matter of course.

In the accompanying photograph is presented what we would term a typical average projection room using two Simplex projector heads, Western Electric sound system with the universal base; and for light two Peerless low intensity projection arc lamps. This lamp only uses 35 amps.

It will be noted that the Western Electric sound system used in this theater is technically known as the 2SX system, approximately seven years old; still using the B batteries as well as

the 264 or peanut type tube in the 41 amplifier and the 242 type tube in the 43 amplifier. It is still not equipped with wide range, which came into being just after this photograph was made.

This projection room is clean; the projection equipment is in excellent condition. A patron going into this theater would see a well projected picture on the screen, but what of the sound? The studios have kept up to the times and are now using super-quality recording and only Mirrophonic or push pull Hi-Fidelity and similarly modern sound reproducing systems can cope with the extreme high and low frequencies used. When one of these later pictures is shown in a house where the sound equipment of the above type is used, could you blame the resulting poor sound on the projectionist, the studio? The answer can only be NO.

In the August issue of International Photographer we will analyze this old equipment and figuratively make it over to handle and reproduce properly the better type sound now coming from the studios.

Paul R. Cramer, Local 150, IATSE.

Anti-Scratch

● Invention of Oakland projectionist to prevent warner damage meets with unusual success.

Persistent and annoying problem to projectionists and exchange workers is scratching of release prints. One new device aimed at correcting this situation, which has been meeting with unusual success, although only recently introduced to the trade is the "Can't Scratch Film End Warner," an invention of R. L. Tanson, projectionist member of IATSE Local 162, Oakland, Cali-



ACTION SETUP. Camera crew catches high and low angles as Randy Scott flashes by on speed horse for scene in "High, Wide and Handsome."

fornia. The device is claimed by its manufacturers to insure positively against damage and insures first run conditions for prints insofar as injury from end warnings is concerned.

The "Can't Scratch" device is attached to the housing of the upper magazine shaft and is controlled by the variation of speed of the upper maga-

zine shaft or spindle. No part of the warner comes in contact with any of the film. It is very simple in construction, easily installed and readily adjustable for time warnings. Installation requires no drilling or cutting of the magazine. Leading theatre supply houses are now handling the device.

Hollywood Offstage

Notes and Comment by Earl Thiesen

Making ice and snow Hollywood style has always presented many problems and amusing incidents. The other day Al Ritz of the Ritz Brothers, fell against a movie snowbank at 20th-Fox only to find the snowbank was made of painted wood.

For some of the closeups in the Alpine scenes needed to complete the 20th-Fox film, "Heidi," snow that would glisten under the studio lights was needed. Ground moth balls did the trick.

Many specialized kinds of "snow" now are used. Ground white chicken feathers photograph like snow on actors' clothes; tapioca is made into movie hail, and so forth.

Sonja Henie skated on paraffin in some scenes in her last film where the noise of skates on ice interfered with the sound.

Gold was ground into a flour dust and then made in a makeup for Jeanette MacDonald in "Firefly." The ordinary makeup absorbs light while this metallic makeup deflects light to give a photographic sheen. A special permit had to be obtained from the government before the gold could be so used.

It takes one hour for a makeup "scar" to be put on George Sanders for his role in "Laneer Spy."

Manufacturers of artificial limbs have been writing to J. Carroll Naish since he played the role of Three-Fingered Jack in "Robin Hood of El Dorado" offering to reproduce his missing fingers.

Helium gas was piped into a bathtub used in "Artists and Models" for bubbling soap suds effects. Judy Canova was taking a movie bath for the camera and Director Raoul Walsh wanted soap bubbles that were big and

bright and covered for censor reasons.

For Home Movie Makers: Olive oil, sparingly applied, can be used to great advantage for makeup effects. It gives a nice modelling of facial contours. Also, the Polaroid sun spectacles put out by the American Optical Company and sold by Eastman can be used in front the lens for polarizing filters. The glass is removed and used in front the lens in the usual manner to kill reflections on glittering water surfaces, plate glass windows, and other shiny surfaces. Results are quite interesting.

Radio Television

● **Academy Research Council's Committee issues second annual report on see-and-hear progress.**

Last month the scientific committee of the Academy Research Council blossomed forth with its second report on the status of television progress. The report emphasized that of developments in the past year, with the exception of improvements in size and quality of received images, and the gathering of technical data, there were "no essential modifications" in the committee's views and forecasts made in its report of May 15, 1936.

The report discusses television developments both here and abroad. Without explanation, the committee makes no mention of the local television experiments of the Don Lee radio chain and other similar groups working on television throughout the country, with the exception of NBC, RCA, Philco and CBS. The report is mostly in general terms and is noticeably devoid of statistical and detailed factual analysis of the television situation.

Complete text follows:

The Research Council's first report on the status of television was released May 15, 1936. This second announcement on the subject, is therefore a review of a full year's progress in this field.

Members of the reporting committee are too well aware of both the potentialities and uncertainties of technolog-

ical research to claim infallibility for such predictions as their task entails. It happens, however, that only one of the forecasts contained in the 1936 report requires, as yet, any essential modification. In every other particular the 1936 report is as valid now as when it was issued. To quote from that report, it is still improbable that television will burst on an unprepared motion picture industry; many millions of dollars must be invested before nationwide urban exploitation of television becomes possible in the United States; the start of such a development, forecast for 1937-38, is confirmed; television service for rural areas is still beyond the calculable future. The one change to which we would call attention is that recent improvements in the design of electronic projection devices give promise of a considerable enlargement of television screen areas, the realization of which would vastly accelerate the evolution of television as a practical art.

British Experiment

It is legitimately claimed for the transmissions inaugurated from the Alexandria Palace in London, on November 2, 1936, that they constitute the first and only existing public television service. For this achievement the British Broadcasting Company, the Marconi-Electrical Musical Industries, receiver manufacturers, and other governmental and private interests involved deserve credit due to pioneers in a difficult field. Looked at realistically, however, theirs is still an experiment, as is any enterprise in which more problems are raised than solved.

Accomplishments may be summed up as follows:

(1) Regular transmissions for two hours a day over a period of seven months, using an all-electronic system with 405 lines and 50 pictures a second, interlaced.

(2) Sale of not over 1,000 television receivers in a highly populous area within, roughly, a 60-mile radius from the transmitter.

(3) Development of technique and operating organization, including multi-camera pick-up, studio procedure, special effects, training of personnel, accumulation of engineering data, etc.

(4) As a special event, the televising of the Coronation procession, under adverse weather conditions, to some thousands of viewers.

Our British correspondents agree, however, on the following adverse conclusions:

(1) Received pictures, which are of the order of 7½ by 10 inches, are too small to afford more than scant entertainment value, even if other technical difficulties, such as consistent lack of definition in the longer shots, are overcome in due course.

(2) Cost of the receivers, 60 and 80 pounds (\$278.70 and \$371.60) makes television a toy of the well-to-do.

(3) Theatrical content of the broadcasts has rarely risen above the level of mediocrity.

In short, the picture is small, the cost high, the show poor, and the patronage meagre. Even allowing for the success of the Coronation visual broadcast, we have to date an entertainment tour de force, rather than a spontaneous growth in answer to a genuine public demand. As for the economic question, it is no nearer solution than when the experi-



Some plane wrecks don't happen but are "built" by studio technicians.



MISCHA'S LANKERSHIM BOULEVARD SWING KINGS. We couldn't find a better picture to brighten the back of the book than this hilarious one-man band photo-montage by William Mellor from still photographs by Roman Frenlich.

Both members of Local 659 must have enjoyed this stunt with the character player who jumped into prominence when directors discover the humor he put over on the set could also click when projected on the screen.

ment was inaugurated. It is argued that if larger governmental subsidies can be secured, better shows will become available, and eventually widespread public interest and participation can be enlisted. Perhaps so. In the United States a few thousand radio amateurs listened to the Highbridge audio broadcasts in 1916; a few years later the number of broadcasts listeners had risen into the millions. In the case of British television it is too early to draw conclusions. At the moment one can only say that such an efflorescence is a hope rather than an early probability. By the end of the year there should be signs of a healthy impetus from within, or the enterprise will begin to have the appearance of that languishing type which needs interminable injections of outside aid.

American Developments

In the United States active television interests have accepted the Radio Manufacturers Association standard of 441 lines, a frame frequency of 30 pictures a second, a field frequency of 60 pictures a second, interlaced, and an aspect ratio of 4:3, the same as in motion pictures. These are the present characteristics of the test transmissions by the NBC from the Empire State Tower in New York, nearest American equivalent to British operations reviewed above. (The former, however, is not a public service; the receivers, of which there are over one hundred, being in the

hands of RCA executives and engineers who report confidentially on the results.) The shows originate in a special studio in the RCA Building and are relayed to the transmitter over a coaxial cable and a radio link between the two buildings, whose airline separation is under one mile. The power of the transmitter, 7.5 kilowatts, is sufficient to lay down a satisfactory signal on the optical horizon, which is some 43 miles from the top of the 1250-foot tower.

Size of the received pictures is about the same as in the British case: $7\frac{1}{2}$ by 10 inches. Such a picture is afforded by a $12\frac{1}{2}$ inch cathode ray tube, a size readily manufactured in the present state of the art.

This experimental service has been in operation for about eleven months, with an interval to permit changing the transmitter from the earlier 343-line standard to 441 lines, and some briefer interruptions. A mass of data on the technique of televising, electrical interference conditions, signal distribution, etc., has been and is being collected. Papers describing the technical aspects of the research are presented periodically before the Society of Motion Picture Engineers, the Institute of Radio Engineers, and other recognized bodies. In connection with one of the most recent of these papers there was a demonstration on a scale as large as 10 by 8 feet, using optical projection from a kine-scope equipped with a suitable lens system, with, it is said, impressive results.

(Similar experiments have been carried on in Germany, but there it was reported that the optical quality of the larger pictures was unsatisfactory.)

Occasional television programs are transmitted from a Philco station in Philadelphia, and others. The Columbia Broadcasting System has announced its intention of installing a television transmitter on the Chrysler Tower in New York.

Other Developments Abroad

In Germany there is considerable television activity. Scenes from the Olympic Games were televised, but apparently the results were unimpressive. In France forthcoming installation of a 30-kilowatt transmitter on the Eiffel Tower is announced. There are also reports of Russian purchases of television equipment in the United States.

General Considerations

Both here and abroad, systematic engineering progress is being made in development of high-definition television. The situation has reached a point where it warrants careful study and observation. Just as physical equipment required cannot be brought into existence quickly, it is impossible to acquire a background in a field as complex as television overnight, and study well in advance is a prerequisite of wise and economical planning. The time is not far off when those engaged in motion picture production, and others whose in-

terests are likely to be affected by the evolution of this new field, will do well to acquire as much familiarity as possible with its characteristics and methods.

We return to the question of picture size. As soon as larger pictures are available with the requisite photographic quality, television may be expected to gain marked impetus, and commercial application in the larger urban centers will not be long delayed. The lesson to be derived from the British experience to date may be that when those in a position to gauge entertainment value advise that a given picture size is inadequate for successful commercial application, no purpose is served by trying it out on the public. The likelihood of a favorable verdict does not increase with the size of the jury. For the United States, it is to be hoped that no attempt will be made to commercialize home television until a picture equivalent in definition to the best home-movie projection, and not smaller than 24 by 18 inches, can be furnished with routine reliability. The most important interests in the domestic field appear to be committed to some such prudent policy.

Situation in Los Angeles

New York and Los Angeles together constitute the principal reservoirs of movie, radio, and television talent in this country. It may be expected, therefore, that when the problems of providing television service for the New York area are well on the way to solution, say in 1938 or early 1939, the next major urban area selected for television coverage will be that of Los Angeles. The topographical and physical conditions in the two regions are quite different, and, it would appear, are on the whole more favorable in the West.

In New York land elevations are relatively low, no point in any of the five boroughs, excepting Staten Island, being as high as 300 feet above sea level. To secure short-wave coverage, therefore, it is necessary to radiate from high buildings, of which there is no scarcity. However, the mass of steel structures on Manhattan Island of necessity casts radio shadows which complicate the problem of television distribution.

Los Angeles, in contrast, is a city of low structures, but natural elevations provide numerous sites from which television service could be effectively provided. Cahuenga Peak, for example, with an altitude of 1825 feet, affords an eminence about 50 per cent again as high as the Empire State Tower, commanding the San Fernando Valley to the north, the greater part of Los Angeles to the south and east, and the beach cities to the west. Topographically, as well as from the aspect of talent availability and entertainment facilities, Los Angeles is a peculiarly favorable site for a television center.

Future Reports

In view of the progress being made in television, this Committee feels it advisable to report its findings semi-annually hereafter, and is scheduling its work accordingly. The next report will thus be issued in January 1938.

Respectfully submitted,

SCIENTIFIC COMMITTEE

Carl Dreher, Chairman; Gordon Chambers, L. E. Clark, J. G. Frayne, Barton Kreuzer, Wesley C. Miller, Hollis Meyse, William Mueller.

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TEAMWORK. Effective illustration of the many elements that must fuse harmoniously together to make a motion picture is this unusual still from Paramount's "Waikiki Wedding." Representatives of every department except producer Arthur Hornblow, Jr., were snapped by the stillman. In the immediate foreground Gene Merritt, soundman, twirls his dials, while alongside his desk, director Frank Tuttle smiles at cameraman Karl Struss. Behind cameraman is writer Bobby Vernon, one-time Christie comedy star, and in the left center, Bing Crosby, Shirley Ross, Bob Burns and Martha Raye huddle together. Grips, props, electricians, assistants, extras and kibitzers complete the scene.

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four large pictures are beautiful samples photography. Did you ever see a dolly shot on the water? Here it is. Narrow strip above shows two scenes of camera mounted on a tower lashed to canoes, which are pushed by the natives for moving shots. Circle also shows Kahle on his floating

still platform made of old oil cans. Lower left: Kahle in action in his improvised dark-room. Lower right: Buddy Wyler and Ellis Carter of the Goldwyn camera unit in the pickup test and loading room they used during Samoan trip. Kahle, Wyler, Carter are members of Local 659, IATSE.



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A Monthly Journal Dedicated to the Advancement of the Motion Picture Industry in All Its Branches: Cinematography, Professional and Amateur; Photography, Lighting, Process, Sets and Decor., Laboratory and Processing, Film Editing, Sound Recording and the Allied Arts and Crafts of Theatre Projection and Operation.

The International Photographer, as the official publication of the International Photographers, Local 659, a part of the International Alliance of Theatrical Stage Employees and Motion Picture Machine Operators of the United States and Canada, not only represents the entire personnel of photographers now engaged in professional production of motion pictures in the United States and Canada, but also serves other technicians in the studios and theatres, who also are members of the International Alliance, as well as executives and creative artists of the industry.

CONTENTS

ON THE COVER. Four periods in the life of Emile Zola, famed French realist author, as played by Paul Muni in Warner Brothers' artistic triumph, based on Zola's career and the famous "Dreyfuss Case." The pictures and the composite of the star are by Bert Longworth, Local 659, IATSE. For a picture story of the picture turn to Pages 16-17.

Frontispiece by Alex Kahle	1
Tradewinds	5-6-7-8
Camera	9-10-11-12-13-14-15
Big Pictures ("Life of Zola")	16-17
Process	18-19
Sound	19-20-21
Lighting Sets	22-23-24
Laboratory	25-26
Projection	27-28-29
Radio	29-30
Classified Directory	31
Close-ups	32
Mail Bag	32

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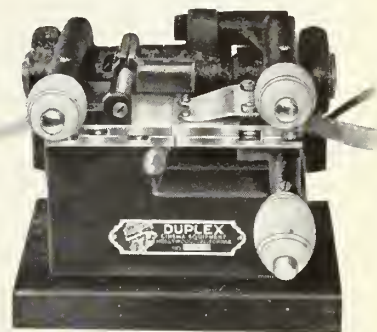
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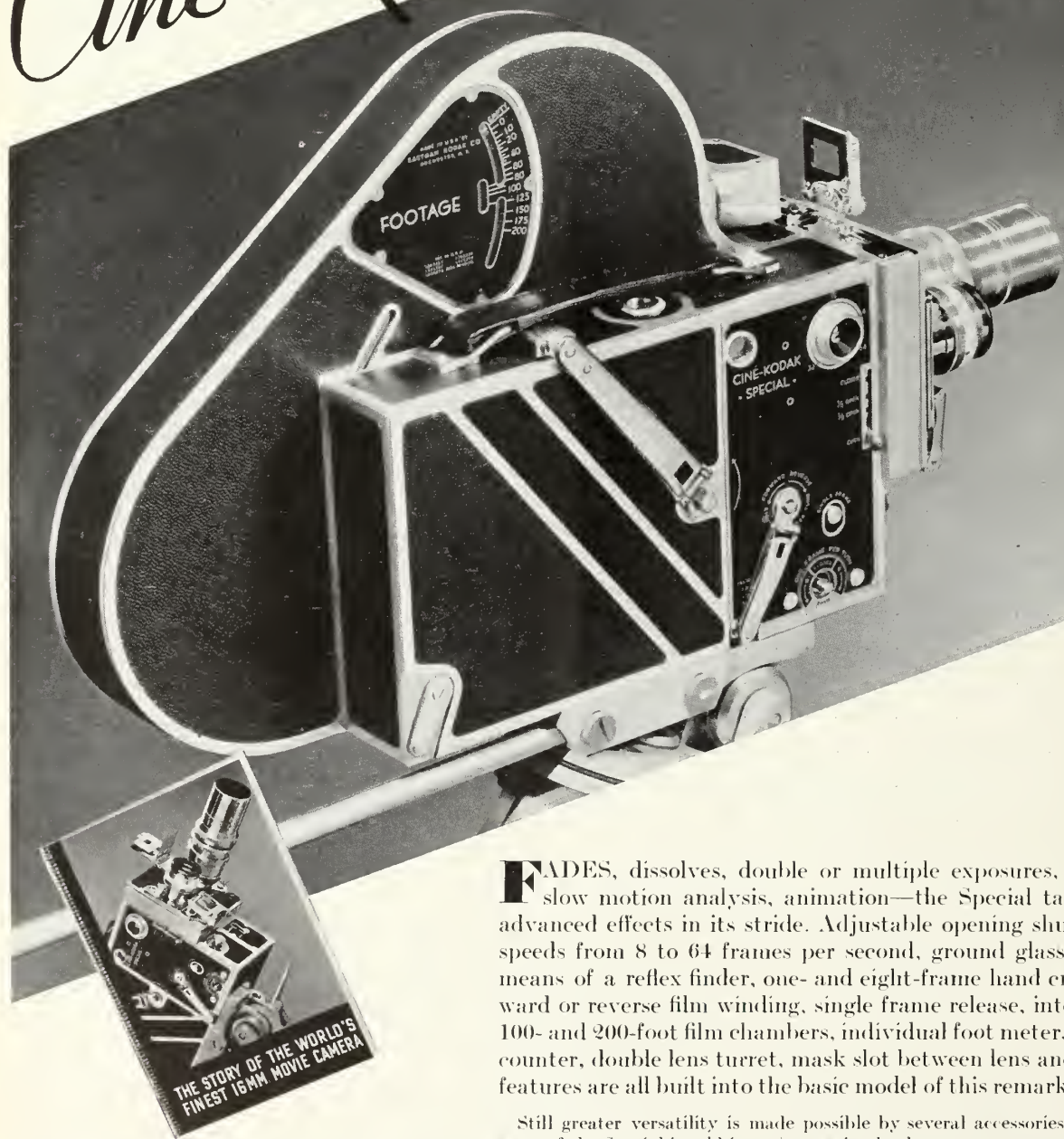


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No. 7

Tradewinds

Future Sound • Adthusiasm • Vidor • Film Classics • Contest • Maps

STEROPHONIC: Sound counterpart of Stereoscopic effect in picture is visioned by technicians as springing from push-pull recording technique.

Sound recording has made most unusual strides in the studios lately in the direction of superior methods of reproduction and dramatic quality as well as in vastly improved handling of the increasingly important contribution of music to the talking pictures. But the busy geniuses of sound are not content. Their eye is on the future and what they vision, according to informed reports, is Sterophonic sound, or something that will be described in similar fashion. It will be to sound what stereoscopic means to the picture. This is considered by experts as one explanation behind the drive for push-pull recording.

The use of push-pull recording is growing and theatre owners are becoming reconciled to the necessity for the new push-pull equipment in order to maintain their competitive position.

While push-pull recording undoubtedly can be shown to have measurable advantages over standard track sound, particularly in regard to volume range, few of the cash customers of the theatres can actually hear the improvement over really good standard track sound. Why then, is push-pull recording being promoted so hard? The probabilities are that as soon as the majority of houses are equipped with push-pull projection equipment, steps will be taken to start "sterophonic" recording.

"Sterophonic" sound will be a sensational step forward as it will enable the actor's voice to move across the screen in company with his image. It will probably be done with two standard tracks on the film, each recorded through a separate microphone and audio channel. The theatre, likewise, must have two separate reproducing channels with speakers mounted on each side of the screen. Relative loudness of the sound from each speaker will determine the apparent point source of sound, which will move across the screen as the relative loudness varies.

The production problems involved in sterophonic sound will be many, but

certainly not insurmountable, it is predicted. Two mikes and booms will be necessary and each will have to have the proper proportion of direct to reflected sound, as well as its proper relative level. It is likely that some kind of a double mike boom will have to be developed which will maintain constant the physical separation between the two mikes, regardless of the mike movements used in following the action on the set.

Another point will be that a line drawn between the two mikes will always have to make a right angle with

the camera's "line of sight," in order to maintain the "sterophonic" illusion.
J. E. NEY, Local 695, IATSE.

They Enthuse

⑥ New ad copy stunt finds Moffitt, Hecht and "First Lady" at typewriters, to put in plugs for pictures.

That there is nothing new under the sun can be proven nearly any day in the publicity field. Last month, however, the "man bit the dog." Whether

BRISKIN STAYS AT RADIO ON THREE YEAR DEAL



Just before leaving for the East end of last month, Floyd B. Odum, president of Atlas Corporation and a top RKO-Radio financial figure, issued a statement intimating that the Gower Street company soon would be out of receivership. He also silenced all rumors regarding Samuel J. Briskin, vice-president in charge of production, shown above, with the announcement of renewal of Briskin's contract, reportedly for three years.

PARRISH

72

VARIETY

Wednesday, July 21, 1937

BEN HECHT LOOKS AT "DEAD END"

by Ben Hecht

I've always had the notion that the screen hit harder than the screen, and dig deeper.

I HAVE SEEN "ZOLA"

I know it is not the custom in Hollywood (or elsewhere) for a member of an audience to make public his enthusiasm through the medium of paid advertising.

But it is the Hollywood custom to advertise those things we are proud of. As a writer, I am proud of this story of a writer though I had nothing to do with its production. As an American citizen, I am proud of the fact that artists of the Republic have at last been permitted to apply their talents to a theme that is genuine. As a Gentile, I get supreme satisfaction from the story that is Gentile who fought to give a Jew justice, and thereby behaved like a Christian. As an adult, I am eternally grateful, though it is most impolite to say so for this overdue relief from Miss Temple's cute expounding of Victorian imperialism to the glibble Alghans. As a member of the American screen audience, I am happy to have seen a picture that is honestly attuned to the spirit of our times.

To Mr. Muni and Mr. Dietrich, I am grateful for the inspiration of their artistry. But to Mr. Will Hays and his organization, I am most grateful of all. By permitting the production of this great film he has proven Hollywood to be something more than a golden concentration camp where the Zolas of TODAY are to be segregated, lest they also appeal to the conscience of mankind.

JACK MOFFITT

★
MR. MOFFITT WORKS FOR
PARAMOUNT; NOT FOR
WARNER BROS.

graciously granted me this permission and
it is my Hosannah—seventy trumpets strong and
all pealing "Dead End" is a knockout.

The Jack Moffitt and Ben Hecht ads which created much comment.

the idea originated from a sub-conscious parallelism of the radio stars' favorite device of patting each other on the back, or just generated out of extra kinetic pressure of California sunshine, the industry was afforded the spectacle of a creator at one lot advertising the product of another company, and an astute producer and publicist following the lead with what may come to be a new trend in motion picture ad copy.

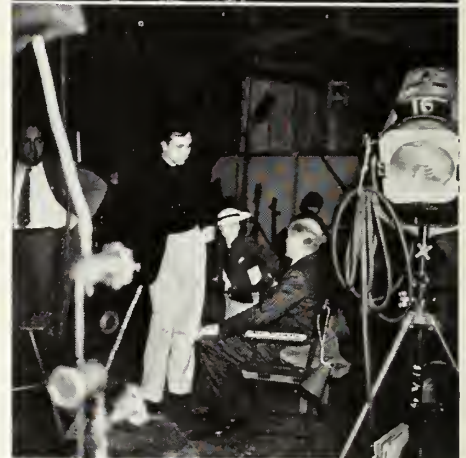
Jack Moffitt, Paramount writer, ex-Kansas City Star movie critic—and a very outspoken one during his tenure—attended a preview of Warners' "Emile Zola," admittedly one of the great pictures of the year. Moffitt became so enthused that he went out and spent his own money to publish a panygeric for the picture, which for simple, concise sincerity and selling punch entitles him to a job laying out ad copy if he ever runs out of story ideas.

This was a field not long left unplowed by canny Samuel Goldwyn, who

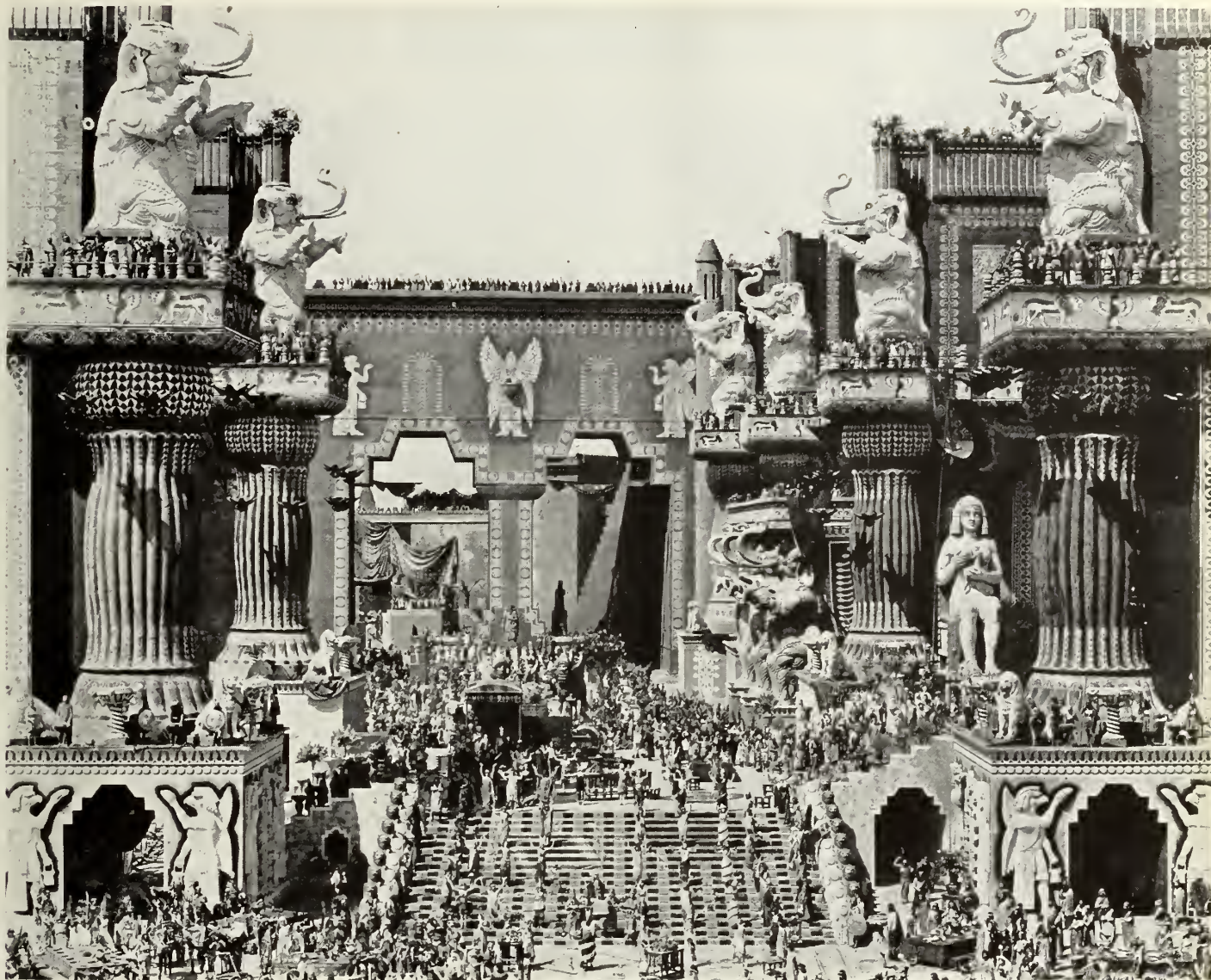
can smell a good publicity stunt before a press agent can say "no passes." Soon thereafter appeared Ben Hecht, another "pants-kicking newspaperman"—to quote his "Front Page"—appeared as author of a page ad in glowing tribute to the art of the motion picture and particularly to Mr. Goldwyn's production of "Dead End."

Hecht is under contract to Goldwyn, but had nothing to do with the "Dead End" production. This type of publicity has been used mildly before, particularly in daily newspaper copy for premiere runs, but never approaching the freshness and zest of the Moffitt-Hecht essays, both of which are reproduced herewith. Goldwyn also excited the admiration of front-page crashers by persuading Mrs. Franklin D. Roosevelt to write a 200-word essay on Mother Love, which is featured in full page

Candid shots by Milt Gold, Local 659, of Anne Shirley, King Vidor, Samuel Goldwyn and Barbara Stanwyck on the set of "Stella Dallas."



GOLD



Most spectacular scene of D. W. Griffith's "Intolerance" and probably one of the most spectacular scenes ever recorded on film. The director's pioneer experiment in simultaneously

telling four stories will be shown this month in complete 13-reel version at Filmarte Theatre. Other screen classics will be shown during August and September.

ads for his production of "Stella Dallas," and achieved considerable front page controversy as to whether or not the "First Lady" actually was or was not writing ad copy for the movies.

"Stella Dallas"

● Goldwyn remake, directed by King Vidor, interesting contribution to modern production technique.

Samuel Goldwyn unveiled a picture to the press last month that marks a distinctive forward step in production technique—"Stella Dallas." The remake of the successful silent film provoked a special reaction from the review audience. More than 20 times, the packed theatre burst into spontaneous applause at the fadeout of sequences. The remarkable demonstration was a tribute to the work of Director King Vidor, who approached the production with a method that will well repay serious study by every studio creator in Hollywood.

Vidor succeeded in subordinating every element of the production to the task of telling the story with the

camera. He tossed a lot of current production bromides out the window and went back to many elementary principles in vogue during the era of silent pictures; yet succeeded in giving the actors full opportunities with lines and allowed sound and music to contribute their shares towards the emotional values.

The result was a thoughtful contribution in script and direction toward simplicity and vitality in film story telling. It should have a refreshing influence on future product.

Screen Classics

● Soucal Film Society seeks bits of unusual film from directors and photographers to expand program.

Interesting and unusual film items not available in the commercial theatre—experimental, odd or unique footage—is being sought by the recently formed Southern California Film Society to supplement its regular bi-weekly showings at the Filmarte Theatre

of American screen classics and notable foreign films.

Search for the interesting short material, or even features if available, is being made throughout the entire industry, but the group is particularly appealing to directors and photographers. Suggestions or available films should be called to the attention of the Society's secretary, Donald Gledhill, at 1202 Taft Building, or by telephoning Gladstone 5132.

The Society's schedule for August and September calls for the showing of the following U. S. classics: "A Fool There Was," "Intolerance," in the complete version of 13 reels, "The Last Command," "Sunrise," and "All Quiet on the Western Front."

Kruse Contest

● Rental service man offers year subscription to Photographer if you can identify old-timers.

Henry Kruse is not too busy with his busy studio camera equipment rental business to forget scouting for old



"THE GOOD OLD ..."
 ABOVE: The crew on the silent "Annie Rooney," which starred Mary Pickford. BELOW: L. B. Mayer, surrounded by the photographic experts of the old Mayer company and one of the largest collections of Bell & Howell cameras ever photographed.



...DAYS"

RIGHT: The crew of the original silent version of "The Mine with the Iron Door;" Sam Wood, who directed, is second from left in rear. BELOW: One of the largest technical and production units ever assembled for a picture, C. B. DeMille's cohorts on "King of Kings."



pictures for a collection he is gathering to adorn the walls of his headquarters. Already he has gathered a large number of those "family" group photos of the type they used to shoot in the old days at the end of a production. Four of them appear in the adjoining columns. Over 300 people can be seen in the four pictures, and Kruse is offering a prize of one year's subscription to International Photographer to anyone who can identify 100 of the happy technicians and production workers in the layout.

Realistic Maps

● Multiplex projector for stereoscopic mapping being developed for U. S. Army by Bausch & Lomb.

A 25 square mile tract can be photographed from an airplane and set down on a table top in three dimensions by means of an instrument known as a multiplex projector now being built by Bausch & Lomb for the U. S. Army Air Corps. The device makes the user feel as though he were a modern Atlas, standing over the earth and able to touch the tops of mountains and run his hand along the bottoms of great gorges.

The method involves no actual model making with tools. A complete representation of a countryside can be obtained in a field station within a few hours after the exploring plane takes off. By simple measurement with a scale in the reduced model one can measure the height of a hummock or the slope of a road as easily as one can measure the height of an inkstand on a desk.

The method is a highly scientific adaptation of the familiar stereoscopic projection effect with two-colored spectacles.

A plane working in conjunction with the aero-projector begins operations over an area containing three points accurately surveyed by traditional methods. As it flies out into unmapped territory, the shutter of an automatic camera looking down clicks at regular intervals.

The film is then developed and printed on small glass plates which are used as lantern slides in a battery of projectors mounted above a table. Images formed by adjacent projectors on the table overlap just as do the areas covered in successive photographs. Alternate projectors form their images in red and green light. The user, wearing spectacles with one lens red and the other green, sees the overlapped area stereoscopically. He gets the same impression of depth as though he were a giant so huge that his eyes were set apart by the distance the plane flew between successive pictures.

The scene, however, only looks natural when the orientations and positions of the battery of projectors reproduce exactly the relative orientations and positions of the taking camera and, of course, the whole system of images appears a meaningless jumble of red and green light and shadow to a person not wearing the color spectacles.

Camera

A New Service • Jones' Shots • Stills at Sea • Makeup Cooperation

TECHNICAL JURY: Photographer to inaugurate products new service.

The following article, by Herbert Aller, executive secretary of International Photographers Local 659, IATSE, inaugurates a new idea which the management of International Photographer believes will be of constructive value to both the industry and the makers of any product sold to the industry.—Ed.

For some time we have been considering a new feature in International Photographer, which would supply a coordinated, orderly and authoritative bridge between the makers of products used in picture making—whether cameras, film, lamps, chemicals or make-up—and the many users in the industry, the majority of whom, in the technical fields, are members of the IATSE. This program revolves around the creation of an "equipment jury" of skilled IA technicians, supplemented by outside experts who are regular contributors to the magazine. Members of this jury would use the products of any and all manufacturers desiring to submit them, under actual production conditions; and the results would be reported and fully illustrated in the magazine.

The program would be supplemented by the listing in orderly fashion, preferably with illustrations, of any new products, with a brief factual description of the item. Discussions with studio executives and technicians have convinced us that they would welcome such a service and a number of old friends of the magazine in the equipment and supply field have evinced considerable interest in the constructive possibilities of the program.

Further details of this policy will be

communicated to all interested parties within the near future. Meanwhile, International Photographer welcomes any suggestions from any industry or manufacturing source as to how such a program can be made to function on a most practical and serviceable basis.

Initial experiment in the idea was conducted through the courtesy of Robert Lynn, Southern California distributor for a number of important camera and allied lines. Mr. Lynn supplied us with a Robot camera and we tried it out at the B. P. Schulberg Studio where "Park Avenue Follies" is in production.

In using the Robot camera, which is distinguished by its rapid fire action, permitting magic eye shots if needed, Leon Shamroy, his second; Ernest Depew, and his assistant, Jack Kenny, and myself were unable—because the instrument was received so close to press time—to obtain suitable shots and have them developed and engraved for actual publication.

However, the comparatively new camera had a number of points of interest. The depth of focus of the lens is more than sufficient to give one a combination of good foreground and background. On sets it also develops that the speed of the lens is adequate enough and almost equal to the lens used generally in production on the Mitchell and Bell & Howell cameras. Thus, the speed of the lens fits in very nicely with regulation set lighting for candid shots.

An additional feature in this connection is that the wide angle lens also obviates the need of holding the range finder close to the photographer's face.

Much more natural candid poses can be obtained since pictures can be made when the camera is held in virtually any position or even concealed.

Although we had no opportunity to use the handy built-in filter to any extent since the experiments in candid shots on the well-lit set did not call for it, it was reliably reported that the Robot's built-in filter serves to accomplish as good an over-correction as any other, with the added advantage of being a time-saver, as well as eliminating the carrying of extra equipment.

Of course, the Robot's small picture size—35 mm.—militates against its use when very large sharp blowups are desired and the loading setup is not of the simplest. Its outstanding feature, however, is its ability to take pictures in rapid-fire succession and we plan to publish a layout of Robot action shots in an early issue of International Photographer.

Herbert Aller.

Jones' Sunset

● Universal still department head gives camera data on his beautiful collection of sunset shots.

Ray Jones, head of Universal's still department, has a hobby of shooting pictures with unorthodox methods, particularly sunset scenes, and Herb Aller last month persuaded Ray to pick out a set of outstanding prints from his collection for the beautiful layout on Page 11. All the scenes were shot at Monterey and Ensenada.

Technical data on the means by which Jones accomplished his rare photo-



Leon Shamroy, ace photographer for B. P. Schulberg, takes time out on the set to inspect the Robot candid and magic eye camera. Shamroy, a veteran member of Local 659,

IATSE, was particularly interested in the Robot's wide angle lens and rapid-fire action.

COFFMAN



Four spectacular storm shots photographed by Kenneth Lobben, Paramount stillman, on "Ebb Tide" high sea jaunt.

graphic effects, keyed by capital letters, follows:

A—Sunset at Monterey: 23-A filter, 25th of a second, at 8 stop;

B—Ensenada Bay: No filter, 2 second exposure, 32 stop, two flash-bulbs to light foreground;

C—Monterey: 23 filter, 25th of a second, at 6.3 stop;

D—Monterey Coast: G filter, 25th of a second, at 16 stop;

E—Ensenada Bay: No filter, 3 second exposure, at 16 stop;

F—Sunset at Monterey: 23-A filter, 25th of a second, at 8 stop.

No Monotony

● Paramount stillman's experiences getting shots during location storm scenes for Technicolor "Ebb Tide."

Every studio still man knows that life in Hollywood can get pretty monotonous at times despite the popular conception that everybody inside the gates basks in that aura of glamour which surrounds movie stars.

The basking, of course, would be pretty nice—if you could find time for it. But since you can't, the studio life of a still man is a matter of hard work. And hard work gets monotonous at times, in Hollywood or Hoboken.

It's assignments like "Ebb Tide" that make the difference—assignments to big pictures that take you out to sea in an old sailing ship, up into Alaska, the timber country of the Northwest, the rugged Sierra Nevada mountains, the bayous of Louisiana.

The still photographer works just as hard, and frequently much harder, on such location trips, but on these junkets into interesting parts of the world he has an opportunity to take interesting pictures. A photographer asks nothing more of this life.

That's why I welcomed the word from Director James Hogan that the "Ebb Tide" company, to which Harry Cottrell, head of the Paramount still department, had assigned me, was going to sea for a couple of weeks on an old schooner.

Since "Ebb Tide" was being filmed in Technicolor, I had shot numerous color stills on it during the weeks the company worked in the studio and on Santa Catalina Island. Now I was to have a chance to shoot some color, as well as black and white, at sea. This, incidentally, is the first realistic color picture of the sea ever filmed, so the Technicolor movie cameramen were having as much fun—and problems—as I was.

One thing that bothered both movie cameramen and still cameramen most was the cramped space in which we had to get our shots. The Golden State, a three-master, which we used in "Ebb Tide," was a good-sized sailing vessel which had been in the South Sea Island trade and also the North Pacific. But no ship is as commodious as the big Paramount sound stages, and when you put a movie company of 150 people and their barge-load of equipment on the deck of a schooner, you've very little room left for picture-making!

A lot of the action, and many of my stills, were shot from a roughly fashioned platform which the company carpenters built on the starboard bow of the schooner. The thing was nailed to the rail, and its supports rested on the anchor. I suppose it was secure enough or they'd never have risked a \$15,000 Technicolor camera on it (cameramen

are supposed to be able to swim, so they aren't considered a part of the risk).

The biggest task of all—for cameramen, players, crew, everybody concerned with the production—was the filming of the big typhoon sequence in which the schooner is lashed by a tropical storm that washes a seaman overboard, almost carries the captain into the sea, and which rips the rigging to shreds.

Naturally, they expected me to cover the storm scene adequately with still photographs. In view of the elements with which I had to contend, it was necessary to figure out all the shooting angles before the storm struck.

I used a miniature camera for covering this scene, a Leica with an f2 lens. All the shots were made at 100th of a second at a stop of f4.5 on Eastman Super-X film. We had, of course, artificial lighting directed at certain portions of the ship, the power being generated right on the scene of operations.

After the color cameras (they used three of them situated at different points on the ship to be sure and get all the angles needed for the picture) had been lashed down and covered as completely as possible, I took my first position under one of the camera platforms. The space was about three feet wide, six feet long—like a coffin. I thought of that, too, when the ship rolled so far over that her scuppers picked up water!

From this position, lying on my stomach and resting on my elbows, I shot a great many of the pictures showing Oscar Homolka being rescued from the end of a wrecked boom by Ray Milland. Other storm stuff I obtained by clambering over various high portions of the deck, fore and aft, and up the mast. The bowsprit also afforded an excellent perch for some fine angle shots which caught the spray breaking over the bows.

Knowing I would have no chance to reload, I started each day of the two-day storm scene with three Leicas in a waterproof bag slung around my neck and protected by my slicker. We all wore slickers, hip boots, sou'westers, and so forth, and even then we were drenched. My cameras were wet several times, but somehow the water never got inside to ruin the film.

I kept shooting steadily with the Leicas, keeping the one in my hands as well protected from the rain and spray as possible by covering the lens after each shot. It was necessary to get the action of the players and the kanaka crew continuously. During the two days I obtained 350 pictures—and thirty-five hundred thrills!

Yes, sir, "Ebb Tide" broke the monotony.

C. Kenneth Lobben, 659, IATSE.

Makeup and Lens

● Notes by Max Factor makeup chief on cooperation between the makeup artist and the photographer.

The professional objective of the cameraman should be nothing more or less than the realistic recording of the

JONES' SUNSETS



A—Sunset at Monterey.



B—Ensenada Bay.



C—Monterey.



D—Monterey Coast.



E—Ensenada Bay.



F—Sunset at Monterey.

personality of the persons at whom he directs his lens.

This summing up of the matter at first appears to present an exceedingly simple proposition, but—there are angles and angles.

For instance—a carelessly done make-up can defeat the best efforts of the most skilled of cinematographers. And, an uninterested cinematographer can be equally as destructive to the finest of make-ups.

It is certainly established that a player cannot come before a camera without make-up, and it is equally as certain that this make-up can either accentuate or detract from the amount of personality which is presented to the camera's recording lens.

The make-up artist's responsibility, then, is a heavy one. He must deliver to the cameraman a made-up personality which, as far as its recording on film is concerned, must appear to have on no make-up whatsoever. And, the make-up creator must also in many cases super-impose his own artistic judgment over that of his subject; there are occasions when the artist, besides doing the actual creation of the make-up, must devote a great deal of his time and energy to an advance sales talk to convince the players that his taste in coiffures, or eye shadowing, or lip definition may be superior to theirs, and is more suitable to the particular picture role than the make-up details which are of their own expression.

On the other hand, there have been times known when the player's instinctive selection of make-up details, even though these selections were in defiance of some basic rule of make-up harmony, were, for that particular person, superior to the set rules. A true make-up artist must be perpetually prepared for proper departures from the basic precepts of his art, in order that he may finally present to the cameraman, not a rule-perfectly made-up and consequently stereotyped person, but a vividly accentuated character, with all of its strength and weakness treated

SELZNICK'S STILL ACES GATHER COLLECTION



One of the best equipped still departments in Hollywood is that of Selznick International, where Fred Parrish (left) and William Wallace, both members of Local 659, IATSE, have gathered a very complete layout of photographic equipment. Wide variety runs from Leicas and Reflex-Korelles to Speed Graphics and Eight-by-Tens. The instrument in mid-picture resembling a machine gun is a new type "magic eye" developed by Parrish, who pioneered in that type of photography several years ago on metropolitan newspapers.

in such a manner as to make them stand out together and register in their film perpetuations.

Logically, then, it is to the interest of both the cameraman and the make-up artist for each to be cognizant of the other's problems, and to be prepared to jointly consider them for the ultimate benefit of their mutual final aim—the creation of a superior motion

picture, one in which the players are presented with a maximum display of that special personality which must be theirs; and which is at the double mercy of the treatment accorded it by the make-up artist and the cameraman.

A. Bernard Shore.

NICKOLAUS NABS THE NAGS IN ACTION



Seldom is the still camera in a position to record the head-on rush of thoroughbreds for the finish line. This action picture was snapped by John Nickolaus, son of the MGM laboratory chieftain, from a speeding camera car during the filming at Santa Anita of scenes for the Marx Brothers' picture, "A Day at the Races." Young Nickolaus is a member of Local 659, IATSE.

Kodachrome

● Eastman conducting a nationwide series of checkup tests for 5x7 Kodachrome cut film.

Eastman is carrying out an interesting and valuable checkup program on its contemplated new 5x7 inch Kodachrome cut film, to the marketing of which all photographers are looking forward with considerable interest. All bona fide photographers shooting color throughout the country are receiving 12 samples of the new cut film and are asked to shoot six shots in duplicate. These are forwarded to Rochester for processing, accompanied by technical data on the conditions under which they were photographed. The Eastman Company retains one set of the experimental shots and returns the other to the photographer to give him an idea of the experimental results. Many studio stillmen have recently made cut film Kodachrome shots under this program, which should provide Eastman with a mass of valuable information.

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KODAK SPECIAL OUT



A close-up on the new Kodak Special Six-20, which will be on the market this month. Described in detail in last month's International Photographer, the new model features the Kodak Anistigmat f:4.5 lens and a Kodamatic shutter.

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Tables on Page 24

Followers of Fred Westerberg's Tables will find this regular feature of International Photographer on Page 24 of this issue. Mr. Westerberg's subjects this month are Sensitometry and Filter Transmission Graphs.

Italy Eases on Color

It is now possible for tourists to expose Kodachrome film in Italy. As no laboratory for processing Kodachrome is in operation in Italy and Italian authorities require official inspection of all motion picture film before it can be sent out of the country, tourists have been obliged to confine photography to black and white film which can be processed in Milan. Applicants to the Italian Tourist Information Office, Rockefeller Center, New York, now will be given a letter to the proper authorities in Rome. After film has been exposed it should be delivered to the official designated in the letter who will forward it to Rochester for processing. The processed film will be inspected by the Italian consul and then mailed to the owner's home address in the United States.

Selznick Still Device

At Selznick-International, Jack Cosgrove, head of the special effects department, and Fred Parrish, stillman, are working out a new system for a larger process screen for background projection shots for stills. Their work is past the experimental stage and when satisfactory tests have been completed, results will be reported in International Photographer. The new device is to be used particularly for color work with Technicolor, Kodachrome and Dufaycolor.

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New Rentals Firm

Newest firm to enter the studio camera rental service field in Hollywood is Landers and Trissel, Inc., who opened their offices and shop last month at 6313 Sunset Boulevard. Partners in the enterprise are Sam Landers and H. R. Trissel. Mr. Landers is one of the veteran cameramen of the industry and a longtime member of Local 659, IATSE.

Harland with Sherman

Russell Harland, member of Local 659, IATSE, now is under contract to Harry Sherman Productions, photographing the "Hop-Along Cassidy" series. Harry Merlin and Perry Finnerman are shooting second; and Ray Flinsky and Harlow Stengel are assistants.

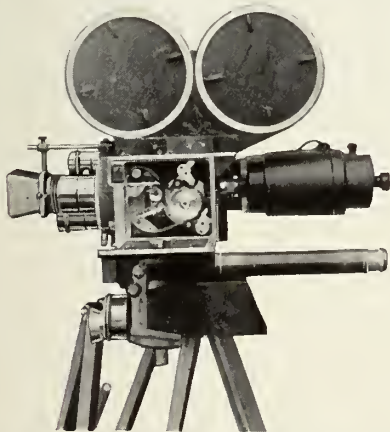
Rehearsals Records

Joan Crawford and Franchot Tone have had their home mike recorder, which they use for rehearsing radio guest appearance roles, geared with their movie camera, so they can get a visual view as well as audible record of their performances.

"Gang" Celebrates

"Our Gang"—oldest single unit in motion pictures, rounded out their sixteenth continuous year of churning out Hal Roach comedies last month. During the period, there have been over 40 children under contract for the series. The "leader of the gang" role in the comedies first was played by Johnny Downs, followed by Jackie Cooper, Dickie Moore and Spanky McFarland, who now has the spot.

See Pages 3 and 26



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"The Life of Emile Zola"

With the able director—William Dieterle—and the acting genius—Paul Muni—a combination that turned out "Life of Louis Pasteur," Warner Brothers have again essayed an artistic triumph in "The Life of Emile Zola," and have come off with a potential box-office hit as well.

The story opens with Zola (Paul Muni) and his friend, the

painter, Paul Cezanne (Vladimir Sokoloff) struggling in poverty but true to their artistic convictions. They are so poor must burn the works of romantics, whom they despise, to themselves warm. The struggling Zola is discharged from minor position with a publishing firm for speaking the about one of the firm's authors.

With a wife and mother to support, Zola works long at night over his writing. His sympathies lie with the poor oppressed and when one day he saves a girl of the streets O'Brien Moore) from the police, the story she tells him in



Dreyfuss fights the charges, but the chief does not hesitate to manufacture false evidence.

Dreyfuss is railroaded to Devil's Island and the real criminal, Esterhazy (Robert Barrat) goes free. A new chief of intelligence (Henry O'Neill) finds evidence to disprove Dreyfuss' guilt and which points to Esterhazy. When he presents it to the chief of staff (Harry Davenport) he is transferred to an African post for his pains.

Mrs. Dreyfuss (Gail Sondergaard) appeals to Zola for his

help, and while her husband is prematurely aging on Devil's Island, the great writer takes up the cudgels in his behalf. writes the famous article, "I Accuse," and challenges the tary to charge him with libel.

Zola seeks to bring out the true facts of the Dreyfuss through the court procedure, through the skill of his attorney Maitre Labori (Donald Crisp) and Georges Clemenceau (Mitchell); but the powerful military clique intimidates the and the jury. The real criminal, Esterhazy, refuses on





to write his famous "Nana" as an indictment against so-
Charpentier (John Littel), a publisher, advances him
ch to live on against the novel and it becomes a sudden
par success. The publisher and his wife (Countess Casti-
ogi) become Zola's lifelong friends.

The Charpentiers and the Zolas, his mother (Florence Rob-
ts and his wife (Gloria Holden), suffer hardships in the siege
Iris during the Franco-Prussian war. The experience prompts
to write a terrific indictment of war and the stupidity of
e General Staff, which later was to react against him when

he became involved in the Dreyfuss case.

Success follows success and Zola becomes the most promi-
nent author in France. From the half-starved aspiring scrivener
he develops into a gourmand and loves to frequent the markets,
selecting delicacies for his table.

Then something happens to shake Zola out of his com-
placency. Captain Alfred Dreyfuss (Joseph Schildkraut) is called
to headquarters one night; accused by the chief of intelligence
(Robert Warwick) of treachery and is offered a chance to save
his honor by suicide. The evidence is flimsy and the innocent



triss stand to answer any questions. Despite Zola's own elo-
plea, the jury brings in a verdict of guilty of libel

Sentenced to prison and to pay a huge fine, while the feel-
ings of the people are inflamed against him through the press,
Zola is forced to flee to England, where he is cared for through
serious illness by an English friend (Lumsden Hare) and his
sister (Marcia Mae Jones). Zola continues the fight. Through
his powerful articles he and his friends in France fight for Dreyfuss'
rehabilitation. A new political regime comes into power. The new

minister of war cleans out the military clique; Dreyfuss is
vindicated and Zola returns to France a hero.

He now is an old man and his victory is a hollow one. One
night he is asphyxiated by a leaking gas heater. The picture
ends with Zola being posthumously honored by the French gov-
ernment in solemn ceremony. Anatole France (Morris Car-
novsky) delivers a eulogy, in which he says of Zola: "He was
a moment of the conscience of man."



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Process

Hal Roach's "Topper" • Teague Expands

"Topper" Tipoffs

● Smooth and efficient production technique responsible for economy in Roach's Thorne Smith feature.

If anyone was foolish enough to ask the question, "When is a trick picture not a trick picture," the answer would be, "Topper." Before production started on "Topper" it was regarded as a trick picture, but by the time it rolled down the ways to its christening at Grauman's Chinese it has evolved into an almost perfectly balanced picture in which camera effects had been skillfully used to tell a very clever story, but nothing more. It was not attempted just to show what could be done in novel effects.

Whatever credit is due the members of Local 659, who turned out this job, is not so much due to having done something that anyone else could not have done as it is to the harmonious manner in which it was accomplished.

The direction was never made subject to the needs of the trick department. As a rule, the director would rehearse just as though there were no effects to be considered. The technicians would then size up the situation and determine a course of action that would accomplish the desired results with the least possible change. Of course there was the utmost co-operation from director, staff, and the veteran actors.

From the actor's standpoint the most exacting action fell to Roland Young, for it was generally he who was left in the scene after the others had dis-

appeared necessitating, in a number of instances, the exact repetition of his action or remaining motionless until the others had run out of the set. His previous experience in such pictures as "The Man Who Could Work Miracles," plus a fine spirit of co-operation proved a god-send to the effect man.

The appearance and disappearance was, of course, effected by lap dissolves in conjunction with the use of a split screen in most cases, although the variety of effects used called for variations from this practice and they became almost an individual problem.

When things just happened with no one around it was generally Charley Oelze, Bob Saunders and Don Sandstrom doing their stuff to the credit of the prop department.

Supervision of the shooting was almost entirely the work of Roy Seawright and the fact that there were no actual production retakes because of the process department, indicates how well he succeeded in his task. Background process was the work of Frank Young, who is also the designer and builder of all the equipment in the department. A quite difficult requirement for his projector was the making of split screen shots against a projected background.

This writer's contribution was a system of mechanically splitting the screen in any proportion, which proved to be so dependable that testing was unnecessary throughout the picture.

From a production standpoint, Mr. Seawright's department achieved a triumph probably unequalled in the industry. Two weeks after the production finished all the effects were completed. There had been no night work and the cost of the department for the pro-



Special effects workers, who contributed much to the success of the unusual production by Hal Roach of the Thorne Smith novel, "Topper": (left to right) William V. Draper, Frank Young and Roy Seawright, department head.

duction was less than one per cent of the total cost.

If there is a reason for the effortless manner in which "Topper" was brought to a happy finish it was the complete absence, on the part of the department head, of that ego so frequently present which presumes that no one can think but the boss. Every man was assumed to know his work and given a free hand, and as a result the inter-department situation never became political. The usual resentment for overbearing treatment was conspicuously absent and every man was happy to do his best.

So, while the press of the country acclaims Seawright for his photographic triumphs, we of the department say, "Orchids to you, Roy, for being a swell boss!"

William Vernon Draper, 659, IATSE.

Teague Expands

● Process expert enlarging service organization, adding engineering and manufacturing facilities.

George Teague is expanding his process and special effects organization both in making preparations for increased service and in his manufactur-

ing facilities. With plans already in motion to open a new publicity and advertising photographic service with a salon near the Sunset strip, Teague also is increasing his process service set-up and facilities to take care of a heavy press of business, which at present is keeping his organization going at top speed.

He also is preparing for manufacturing on a larger scale and has associated with him William Zimmerman, widely known as one of the outstanding pattern and model makers in the equipment engineering field. Manufacturing headquarters and machine shop are on Santa Monica Boulevard near Virgil, while the organization's main office is at the General Service Studios.

Expansion of the Teague organization on a broad scale will for the first time make available to producers outside Hollywood in the commercial and non-commercial fields, the type of special effects and transparency equipment used for major productions. While Teague's equipment is widely used in Hollywood and in the major foreign production centers, it is not generally known that such organizations as the Chrysler automobile company, which produces a large quantity of commercial film, are keenly interested in the most modern equipment. The Chrysler organization already owns a Teague slide film stereopticon and a background transparency projector.

Sound

Standards • Playback • Mobile Equipment

Sound Idea

● Instruction sessions to develop standard practice suggested by recorders as constructive step.

Many studio sound recorders currently are expressing a desire to see steps taken toward standardizing certain phases of recording procedure.

Every mixer has a pet system of buzzer signals which he prefers, but these often differ markedly from another mixer's ideas on the subject. Every laboratory has different ideas on the ideal way to write up the log of takes and every studio has a different form to keep the log on.

Some studios want take numbers punched on the film. Others want penciled numbers and various and sundry notching arrangements are in use, all to the ultimate confusion of the recorder.

Every studio has a pet method of establishing the overload, or clash point, and there are almost as many ways of adjusting noise reduction equipment as there are recorders. Needless to say, the result of all this lack of standardization in procedure results in something less than perfect sound, and it appears to everyone's benefit to provide a means of ironing out these differences in recording technique.

One constructive suggestion that has

been voiced about by a number of individuals in the sound field with an eye to improving efficiency is that RCA and ERPI hold a series of instruction sessions at which these points can be thoroughly aired.

Playback Equip.

● Although prescoring is now the rule equipment modernization for better playback quality needed.

Prescoring of music, where the music is recorded on a scoring stage and the action is later synchronized to fit the music, is now the rule rather than the exception. Due to the constant growth in importance of the background and incidental music, playback equipment has come in for a good deal of modernizing. However, many playback units now in everyday use, can still stand considerable improvement as in some cases the sound is almost unrecognizable. While the poor quality of sound reproduction found in the majority of playback units bears no relation to the sound on the release print, nevertheless, good high frequency response in the playback equipment materially helps the artists

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Mobile Sound

● Trend to portable sound has many advantages, some handicaps; ample power being big need at present.

Rapid growth recently in the development of complete sound channels mounted in light truck chassis has many advantages, also some disadvantages. Improved flexibility allows the sound to follow the production from stage to location with a minimum of changes in crew and equipment, and thus with a minimum of variations in the sound quality, between stage and location.

The first mobile units were mounted in heavy trucks but recent improvements by RCA and ERPI in reducing the weight and bulk of the recording channels has allowed the use of light 1½ ton trucks. ERPI recently equipped special trailers with their new Q channels for General Service Studios (International Photographer, May, 1937, illustrated) and these channels are very popular with recorders because of the roominess and comfort of the trailers. These trailers differ from the standard



The RCA new type playback unit used at Warner Brothers, is cause for a get-together by (left to right) Adolph Deutsch, musical director for Mervyn LeRoy's unit; LeRoy; Lorenz Hart and Richard Rodgers, musical comedy author-composer team, who are preparing "Food for Scandal," which LeRoy will direct, teaming Fernand Gravet with Carole Lombard.

in synchronizing lip movements with the prescored sound.

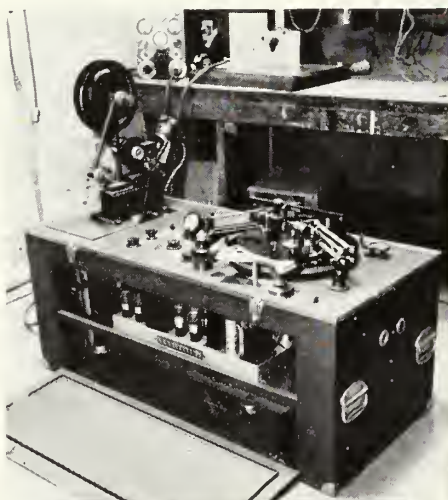
Many studios have developed their own equipment for this work but RCA and ERPI are lately actively taking an interest in supplying efficient, modern equipment.

The most modern playback units include a 33-78 rpm disc turntable as well as the standard Moviola sound head. Synchronous or interlock operation is provided for both the disc turntable and the film phonograph. A wide variety of equalizers for both low and high and equalization are useful in neutralizing undesired characteristics in the equipment as well as emphasizing lip sounds or synchronizing cues.

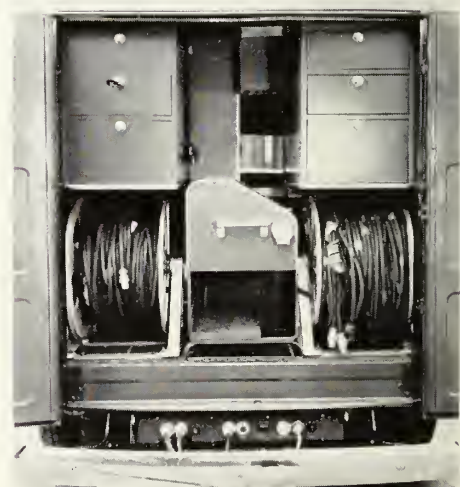
Some playback units include a cutting head for making instantaneous cellulose or nitrate discs, for either synchronous or non-synchronous playback. Of course, the presence of the recording cutter requires provision for mixing either a microphone or line input. When this is done the unit also has the

advantage of being used as a public address system whenever the director wants to address a mob scene, etc.

J. N. Ney, 695, LATSE.



TOP: New type playback unit built by General Service Studio. The unit is shown unmounted. It consists of recorder, playback and public address system. The ERPI unit will record any type record as well as film; and can handle the output of playback film or record, together with any supplementary announcement or sound through the public address system. It also can either make records separately or with interlock in sync. BOTTOM: Special dolly for the new playback unit with underslung loud speaker mounted.



TOP: Partial interior view of the new General Service Studio sound truck showing recorder; at left partial view of recorder control panel. BOTTOM: Rear view of sound truck.

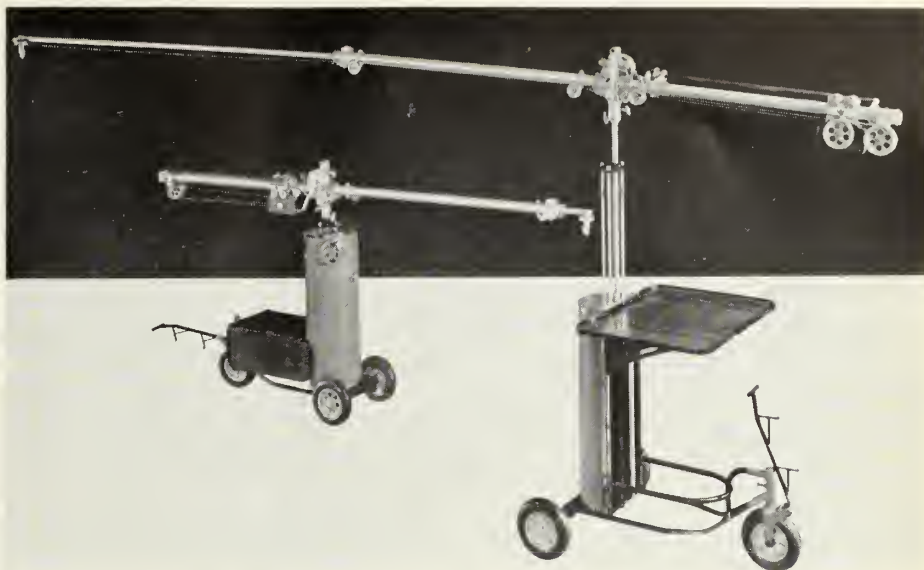
truck installations in that they do not carry any power supply equipment or batteries around with them. Thus their use is limited to the lot, or a point where three phase operating and synchronizing power is available.

The battery charging problem in the truck units becomes troublesome on locations where the company wants to operate 18 or 20 hours a day to save time, yet expects the batteries to be brought back up in six hours or less, generally less. It seems the only answer to this problem is to provide gasoline driven generators as the source of power for the recorder and camera, with the elimination of all storage batteries. Two studios now are experimenting with three phase alternators bolted on the front end of the crankshaft of the truck in which the recording equipment is carried, and while the experiments are still very much in the "hush-hush" stage, it is reported that encouraging results are being obtained, from the standpoint of frequency stability and engine noise.

J. E. Ney, 695, IATSE.

Glenn R. Kershner

International Photographers,
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Lighting-Sets

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Industrial Pix

● Pointers on effective lighting under adverse circumstances from a veteran studio photographer.

To comply with the many requests received by the International Photographer from cameramen photographing industrial productions throughout the world, Mr. Gus Peterson, member of Local 659, IATSE, cameraman for Grand National, Trem Carr (Universal) and Republic Studios, has consented to write for the International Photographer from time to time on practical matters of interest and importance to these men, so that they may enhance the photographic value of their pictures.—Ed.

The photographing of industrial motion pictures differs from the photographing of theatrical motion pictures only as the budget and time elements affect them. Industrial motion pictures are, in many cases, produced and photographed with the same finesse used by the larger studios in their pictures. The industrial cinematographer, however, often encounters problems seldom met with in studio production; he must photograph the action, not in a well-lighted set on the stage, but in the actual setting—the crowded factory room, in the tunnel or next door to the super-heated furnace.

This cameraman, even if the budget would allow him all of the lights and power he desired, in many cases can find room to use only three or four lamps, and must light many square feet of space with them. If his lighting is aided by windows in the room, his lamps must be used to focus attention on the foreground action and to soften shadows where the daylight does not carry. Cross and back light on the action will do more for the picture in many instances than front light. Close-ups can be shot with one lamp rather high and a few feet to one side of the camera, with a second lamp softened down on the other side and about lens high. A third lamp, if available, is useful as back light on the shadow side. Some diffusion will go a long way in smoothing out harsh shadows in close-ups when lighting equipment is lacking. A thin, black gauze net, or diffusion disc—sometimes both in combination—are much in use in the studios.

Machinery can be photographed with limited equipment by playing for high lights on revolving parts and along shining cylinders. A few photofloods will do wonders in such cases. The highlighted moving parts will take the curse off the empty shadows. Concentrate the light on your center of interest and, if limited for lamps or power, forget what you must of the rest; let the imagination of your audience take care of it.

I wonder how many industrial photographers have ever tried to use flares

in exterior night shots. Many unusual effects can be obtained with them; night shots of construction camps, street crowds, etc.

The new type of Infra Red films should also prove a boon to the industrial cameraman. Hollywood cameramen are having considerable success with it in shooting many kinds of night shots in the daylight.

It is suggested that care be exercised when using Infra Red film, particularly regarding trees of a light green shade. With this film, and the red filter it is necessary to use, greens and reds have a tendency to wash out or get extremely light. The recommended filter is known as the 29F, but any red filter from 21 to the 72 may be used with practically the same exposure factor, the only variation being in the degree of contrast on the negative; the lighter filter usually giving a softer result than the extremely heavy ones. Technical information as to this film can be had from Eastman, Dupont or Agfa Film Companies, or from the International Photographer.

Gus Peterson, 659, IATSE.

Portable Power

● M-R's new location power unit can supply sufficient juice for a town with 2500 population.

When a picture company goes on location at night, tremendous amounts of electrical energy are needed to light scenes for the cameras. It is not unusual for electrical needs of such a company to equal or exceed power requirements of a good-sized town.

To meet such situations in a modern way Mole-Richardson has put into service a new fleet of the largest portable gas-electric generating plants in the world. Each unit is capable of generating 1400 amperes of 125 volt current—enough to supply electric light and power to 600 average homes, or to a town of 2500 population. Four of these plants have thus far been built. Two are in active service in Hollywood; the third lights up the English countryside for M-R's British branch; and a fourth has just been completed for addition to Hollywood's fleet.

These mobile power-plants are mounted on stream-styled Diamond-T trucks. The generator unit is self-contained and may be quickly removed and placed in an ordinary railroad baggage-car, on a steamship's deck, etc., when the company uses such locations. The generator and the gasoline engine which drives it have been silenced to such an extent that they have been operated within 200 feet of the microphone on open locations.

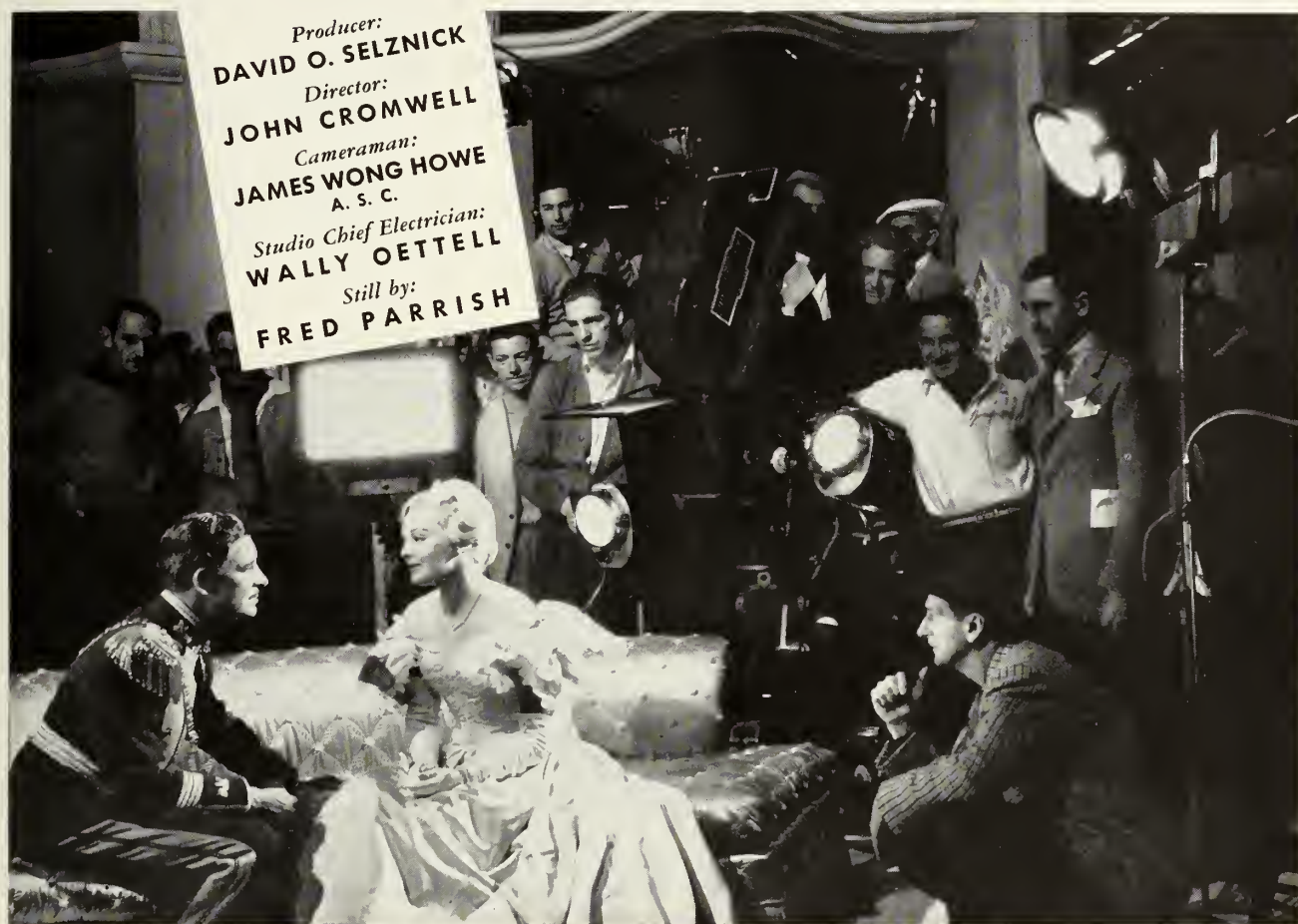
Marine motors have been chosen as power units, since they are designed for long periods of constant speed operation under heavy loads. The first three plants use 270 h.p. Hall-Scott marine engines; the newest plant, made for loads intermediate between those requiring these largest generators and those for which the smaller 250-ampere "booster-light" generators are sufficient, is powered with a 140 h.p. Gray marine engine and delivers a maximum of 650 amperes.

The generators have been specially designed by the General Electric Co. to match power curves of the engines



Trio of Mole-Richardson streamlined portable power units for location work. Mounted on Diamond-T trucks, they can supply any usual juice needs.

SHOT DURING THE FILMING OF SELZNICK INTERNATIONAL'S NEW PRODUCTION
 "THE PRISONER OF ZENDA". . . . featuring Ronald Colman and Madeleine Carroll



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This shot brings out clearly one very helpful quality of lighting equipment using G-E MAZDA lamps: It is so compact that you can secure any lighting effect you desire, no matter how cramped or crowded your working space. You can actually *get* results that are difficult, if not impossible, with other illuminants.

But the usefulness of G-E MAZDA lamps is not confined to working in close quarters. There is an amazingly wide range of types and sizes to provide light for every lighting need . . . from set lighting to special effects. Are you benefiting fully from this versatility? General Electric Company, Nela Park, Cleveland, Ohio.



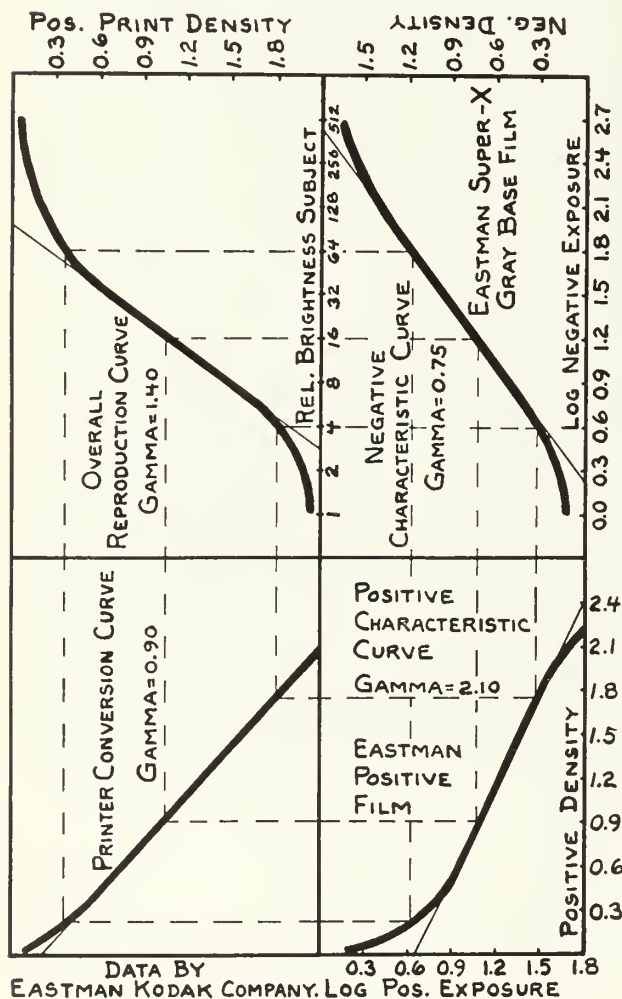
GENERAL  ELECTRIC
MAZDA LAMPS

The CINEMATOGRAPHER'S BOOK of TABLES

By Fred Westerberg

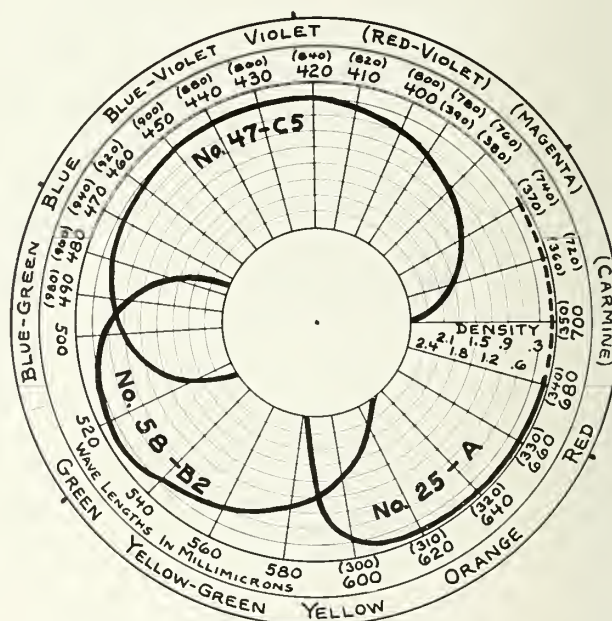
Cameramen Should Add These to Their Red Books

SENSITOMETRY

Sensitometric Tone Reproduction Cycle
Illustrated by Typical Case

FILTER TRANSMISSION GRAPHS

Wratten Light Filters

Transmission of Standard Tricolor Filters in
Relation to the Color Octave

Filter Transmission Data by Eastman Kodak Company

Wratten Light Filters, 1936 Edition

which drive them. They attain their rated voltage at 1200 rpm, and deliver 1000 amperes continuously at 1600 rpm. At 1800 rpm—the engine's most economical continuous heavy-load speed—these generators are practically flat-compounded. In emergencies, under intermittent load, they have produced as high as 2400 amperes.

Since practical value of such a power-plant is essentially measured by dependability, M-R design lays special stress on this factor. The engine's fuel-feed system, for instance, is in triplicate, with one mechanical fuel pump and two electric ones. In the event of failure of any one, the others may instantly be switched on to keep the plant running.

The engine's cooling system is amply oversized and designed specially for the unusual requirements involved. The

radiator consists of two separate cores of six sections each, through which air is circulated by a fan of a type affording the quietest possible performance. This fan is driven by a variable-speed electric motor fed by the main generator. By varying the speed of this fan, the water may be kept always at 160 degrees Fahrenheit, the correct temperature for most efficient operation. The engine's lubricating oil is separately water-cooled and filtered.

Motion picture lighting demands close control of voltage. In this installation, the driving engine is fitted with a centrifugal governor, while the generator, in addition to the normal voltage regulation secured by compounding the generator, is fitted with a counter-EMF voltage-regulator system which automatically regulates the line voltage when subject to such large disturb-

ances as in switching off a large number of lamps.

All controls for both motor and generator are centered in an external control panel on the outside of the unit's soundproof housing where they are conveniently at the operator's hand.

Hanna Held Up

Part three of Merrill F. Hanna's series on the departments of Local 37, IATSE, is held over until the September issue of International Photographer due to Mr. Hanna's time being fully occupied with the serious illness of his wife, who underwent a major operation last month, from which she is now well on the way to recovery. The "grip" department will be the subject of the next article in the series.

Laboratory

Duplex • \$150,000 for Toning • Negative-Positive Kodachrome

Duplex Spreads

● Expanding facilities to supply production demands for Universal Printer, DeLuxe Splicer and Camera.

General expansion of facilities of the Duplex plant now is under way to meet production demands resulting from the success of the company's Universal Reduction Printer, and its new DeLuxe Splicing Machine and camera. Particular success has been chalked up by the printer, which combines a number of features that appeal particularly to the smaller laboratories, wherever film is handled.

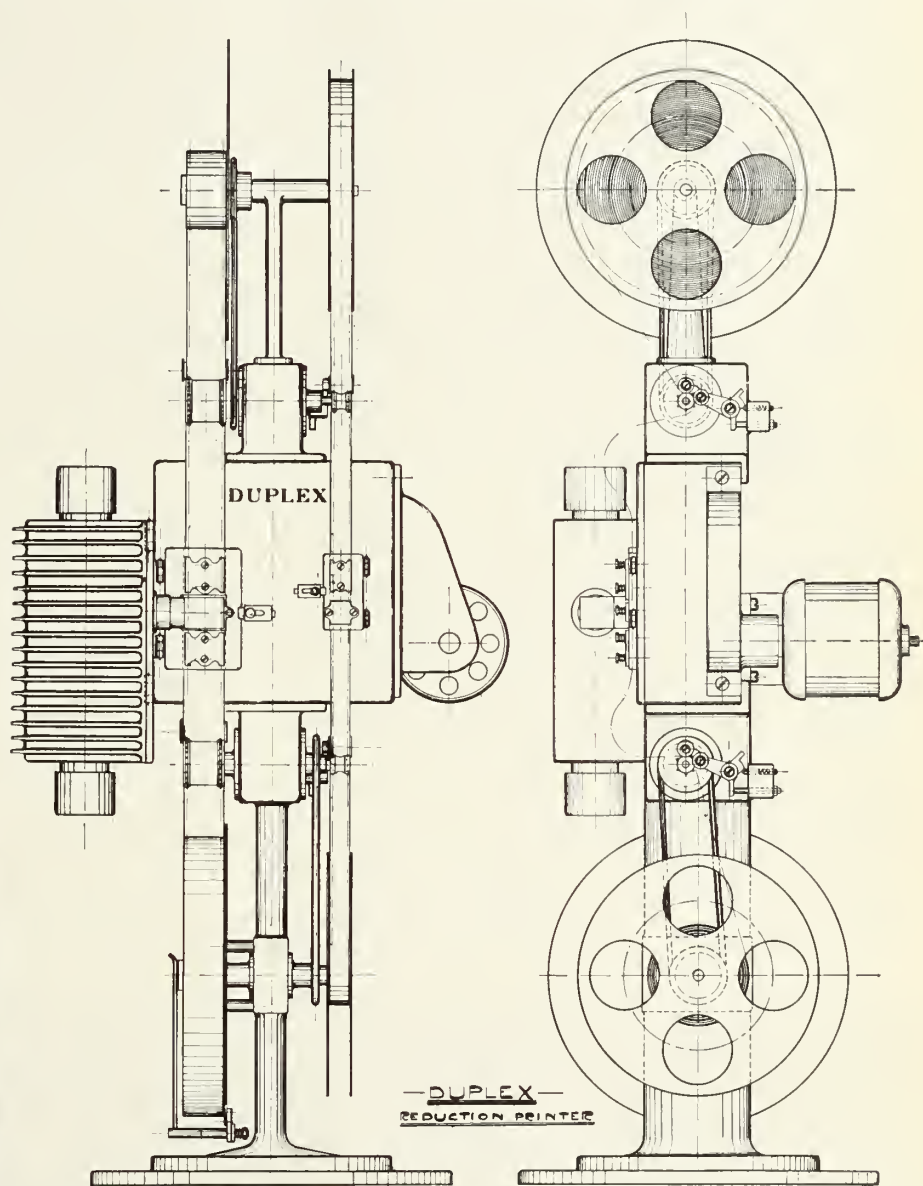
Equipped to handle both black-and-white and color, the printer is unusually versatile, easy to operate and has the advantage of being small and compact. It is 42 inches high. Basis of the machine's versatility for both contact and reduction work is its camera style mechanism. It is a step printer with an intermittent movement, and has pilot pin registration. In reduction or enlargement work the large film moves in one direction and the smaller film in the opposite.

The Duplex printer also can readily

PARAMOUNT LAB HEAD



James R. Wilkinson, for more than 15 years with the Paramount studio laboratory and for the past year head of the camera department, last month was promoted to take charge of the laboratory. Wilkinson has been succeeded in the camera post by C. Roy Hunter, who has been camera head at Universal and laboratory executive for Consolidated. Harris Ensign, for a number of years laboratory head, resigned, and has not yet announced a new affiliation.



Mechanical setup of Duplex Universal Reduction Printer.

be adapted for color work.

Among the things that the printer will do are:

- (1) Make 16 mm. prints from 35 mm. negatives.
- (2) Make 16 mm. and 35 mm. contact prints.
- (3) Make 35 mm. prints from a 16 mm. negative.
- (4) It can also be adjusted to make 16 mm. negatives from a 35 mm. print or 35 mm. negatives from a 16 mm. print.

The machine was designed some time ago by the Carleton Brothers but only recently has production been stepped up to meet the demand. It is ruggedly built to operate for years without appreciable wear, and carries the usual

Duplex guarantee. Current models have been improved and refined, particularly through the installation of new plant equipment, which insures minute and speedy accuracy on many production operations.

M.G.M. Invests

● Studio will spend \$150,000 for new machines to make sepia-platinum toning available to program.

With addition of four more machines, built of special chemical resisting metals, at a cost approximating \$150,000, the MGM laboratory will be in a position to handle all ordinary demands

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for its toning, which has clicked so strongly in a number of recent productions. The new equipment will be ready to function in three months.

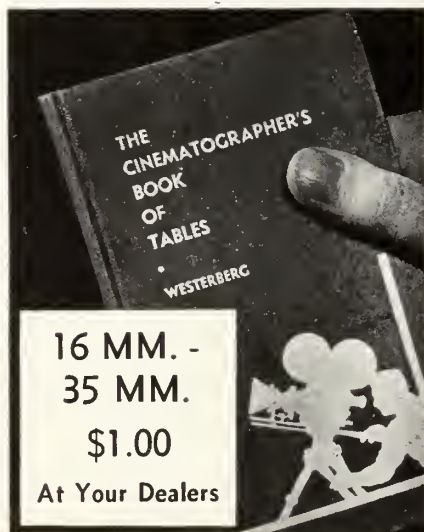
However, the print treatment will not be ballyhooed as Metrocolor as was announced last month. After conferences between Eddie Mannix, John Nickolaus, MGM's lab chieftain, and other studio executives, the use of the label, "Metrocolor," was called off and the process will continue to be known as sepia-platinum.

Last month it was reported that Paramount, under its new laboratory head, James R. Wilkinson, also will join the toning parade. Already 20th Century-Fox has followed the MGM lead, using toning on "Wee Willie Winkie" and planning to use it on other big pictures.

Color News Flash

● Eastman reported hot on negative-positive system of obtaining release prints from Kodachrome.

Just before going to press it was learned that the Eastman Company is working intensively on a negative-positive method of making Kodachrome prints, and soon is expected to officially announce practical results from its experimental program. Technical experts see the accomplishment of a practical method of thus processing the complicated Kodachrome superimposed emulsions as the most sensational forward step in color photography in recent years. Ability to accurately control Kodachrome processing and at the same time turn out release prints from a single film through the negative-positive system would make color a matter of prime consideration with every major producing company. The satisfactory negative-positive print method is the goal toward which Agfa with its new multiple emulsion Agfacolor, and Du-faycolor with its reseal screen line pattern, also are striving. Details of the negative-positive color printing will be published in the September issue of International Photographer.

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... picture value.

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See Pages 3 and 15

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Projection

Second in Series on Progress in Projection-Sound Equipment

MIRROPHONIC: Western Electric strides in past ten years; Pantages Booth.

In this second article of a series Paul R. Cramer, member of Projectionist Local 150, IATSE, Los Angeles, keeps his promise of digging into a thorough study of the projection equipment situation. Mr. Cramer contends that in many instances despite good projection equipment, the projectionist cannot deliver the type of sound recording coming out of Hollywood to theatre audiences, because the sound end of his booth is behind the times. Articles and comment from IA members on this or any other constructive phase of projection practice improvement are welcomed and it is hoped that this series will stimulate informed technicians throughout the country to join in the discussion.—Ed.

Last month in International Photographer, we presented a typical clean projection room, but one which was laggard in supplying the personnel with the proper equipment to give the modern recordings the best reproduction in the theatre. This month we have a crack at a modern setup in the heart of the industry's production center—Hollywood—where frequent preview audiences demand the utmost in projection quality.

The history of the Hollywood Pantages Theatre projection crew, whose equipment is illustrated and described herewith, like that of the Grauman's

Chinese, Warner Brothers' Hollywood, the Carhay Circle, and other houses where previews and premieres are routine, if told in detail, would make a thrilling romance of technical progress.

In each instance the handful of men in the booth have had to pit their courage and wits against a continuous flow of new situations and problems. They have had to deal with scores of engineers and experts from equipment companies and the studios. Their theatres have been the battlefields of experimentation, proving grounds for new ideas and methods—some good and some bad.

Each day produces for them new twists and turns in the unceasing struggle towards perfection. There have been instances where they tore out equipment and replaced it with something new that had been discovered overnight and the next day out came the new discovery to be followed by another one.

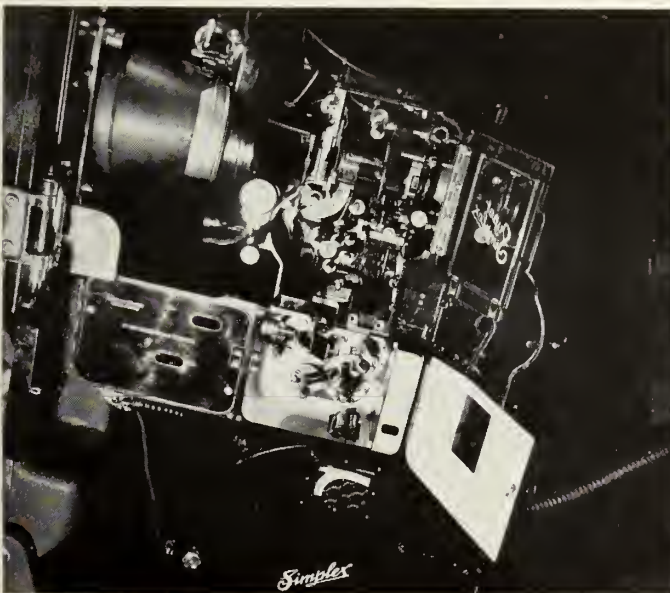
These men are constantly studying, testing and checking. For in Hollywood on a preview or opening night, they must please more than the regular audience. There are the innumerable technical experts from the studios, the other creative contributors from the camera ace to the bit player.

Today the Pantages booth is one of the most neat and modern in the coun-

try. In the accompanying photograph you will notice that the first projection machine is equipped with the new Mirrophonic sound head, as well as the new base (note one of the old Universal base machines with its usual disc reproducer in the background) also that the driving motor has been placed directly in front and slightly below the sound head, doing away with all of the universal joints and long driving shafts, as well as the heavy gear boxes that needed so much attention, and doing away with all chances of mechanical flutter, which is absolutely necessary with push-pull and Mirrophonic reproducing.

The general equipment of this booth is well above the standard, consisting of a stereoptican, of which you can only see the leg on the extreme left of the picture, then a master effect machine followed by three projection machines, beyond these are a series of spots and another effect machine, and on the wall at the end we find the master switching panel board; at the right foreground is the sound panel board or amplifier, with its switching cords, having a maximum output of 100 watts. It also is interlocked with the P.A. system so that in case the amplifiers in the projection room are temporarily out, the P.A. system can be used for sound.

The purpose of this article is to discuss further the improvements in sound reproducing equipment which have been made available to the exhibitor since the advent of sound pictures. In the last article, I referred to a Western Electric Sound Reproducing System,



The Pantages Hollywood Theatre projection booth, featuring Western Electric Mirrophonic sound; (left) the new Mirrophonic sound head, recently installed, mounted on a modern Simplex base; (right) the Pantages projection crew:

Chet Allen, Bob Clark, J. H. McDonald, Lloyd Peterson, and Chief of Projection R. L. MacDonald. All are members of Local 150, IATSE & MPMO.

and, for the purpose of continuity, the following deals with the important improvements developed by that company since 1927.

Let us begin with the film reproducing attachment or sound head. The early models were subject to flutter if the take-ups and other mechanical parts were not carefully adjusted. As sound on film replaced sound on disc recordings, and the quality gradually improved, it became evident that a film less critical to mechanical irregularities was necessary. To overcome this difficulty, a device known as a hold-back sprocket was developed. It consists of a driven sprocket and is placed between the sound head and the lower magazine. In this location it acts as a buffer so that irregular motion will not be transmitted along the film to the point of scanning.

Next important development in sound heads was the oil damped flywheel which formed part of the sound unit on the Universal Base and was introduced in 1928. The damping action kept gear noise from being carried to the film through the sound sprocket shaft and also insured that the film would move past the optical system at uniform speed. By using this type of driving mechanism, marked improvement resulted in the quality of reproduction.

About the same time, an improved optical system with a curved slit and lenses carefully corrected for chromatic and spherical aberrations was introduced. The new lens tube could be purchased as a replacement unit for any system in service up to that time. This lens increased the high frequency response which improves sibilance in speech and adds life to the music.

Several years later another sound reproducing attachment with many mechanical improvements and refinements was placed on the market, but the important features of the film movement and scanning system were approximately equivalent to the Universal Base, and therefore no further reference to this attachment will be made.

In 1933 Wide Range was introduced. This system incorporated an improved method of moving the film past the point of scanning by the use of a curved gate which eliminated all pressure pads used on former systems and would fit any sound reproducing attachment then in use. The new gate reduced the flutter and improved the reproduction of voice and music to a marked degree.

During 1936 an entirely new film pulling method known as the Kinetic Scanner was incorporated in the Mirrophonic systems. The new scanner operates on the principle that two masses of unequal weight coupled by an elastic medium cannot oscillate at any giv-

en period. Therefore, constant movement of the film past the scanning point is assured. Flutter is practically eliminated with this type of mechanism and can be maintained under .2 per cent. There are two models of the new sound head. One is equipped for push-pull operation, rear scanning and other refinements. The second model is front scanning, and while it does not incorporate facilities for push-pull, it can be modified should push-pull films become general release. The sound quality with this type of film reproduction attachment is excellent and is a great improvement over all previous methods.

Having completed our discussion of sound reproducing attachments, next logical step is to follow progress in amplifiers and power equipment design.

The first amplifiers used in sound motion pictures were battery operated. Storage batteries were used to heat the filaments in and supply the plate voltage to the vacuum tubes, and to light the exciting lamps as well as to excite the receiver unit fields. As we all know, storage batteries require considerable maintenance and are costly to replace. Also, the terminal voltage does not remain constant during the discharge period. These factors made it desirable to develop a new method of supplying power to the various amplifiers and other units in the sound system. New power amplifiers were soon developed which were AC operated with self-contained rectifiers for plate supply. This design eliminated the necessity for storage "B" batteries and reduced the number of "A" batteries required. In 1930 Motor Generator Sets were introduced, which entirely eliminated the need for storage batteries. Several years later tungar type rectifiers, known as Power Units, were developed which replaced the Motor Generators. These were designed so that they could also be installed on all systems which used storage batteries.

Development of new horn systems (which we will discuss later) and de-

mand for more life-like reproduction and greater volume range, made it necessary to increase the power output of amplifiers and to improve their frequency characteristics. The first sound systems employed power amplifiers which had an output capacity of 1.7 watts to 19 watts, depending upon size of the auditorium. Amplifiers designed for the new Mirrophonic systems range from 8 watts to 150 watts. These ratings are based on less than two per cent total harmonics. The frequency characteristic of the first amplifiers was reasonably flat from 60 to 8000 cycles. The new Mirrophonic amplifiers are flat within one db from 40 to 10,000 cycles. All of the new amplifiers are equipped with harmonic suppressor circuits, and one model uses inverse feed-back to insure low noise level and minimum distortion.

The next subject which we will consider is the development of horn systems.

The first systems used folded or curved wooden horns of exponential design with an air column approximately 14 feet long and a receiver unit of dynamic type with metal diaphragm. This general type of horn was used until Wide Range was announced. The three-way Wide Range horn system consisted of a low frequency speaker, a mid-frequency speaker, and a high frequency speaker, the actual number of units depending upon the size of the auditorium and the output power of the amplifier.

The low frequency unit included two or more twelve inch dynamic cone type speakers mounted on a flat baffle designed to reproduce frequencies below 300 cycles.

The mid-frequency speakers were the air column horns and units used with previous systems. As used with Wide Range, these speakers reproduced frequencies from 300 to 3500 cycles.

The high frequency unit was a small exponential horn about ten inches long with a special metal diaphragm type of dynamic driving unit coupled to the horn and reproduced frequencies from

DETROIT TIGERS JOIN THE ARGUS ARMY



Members of the Detroit Tigers ball club were infected with the photographic virus last month, by Charles A. Verschoor, president of International Research Corp., manufacturers of the Argus, lowest-priced candid camera. In the picture are (left to right) Verschoor, getting a candid shot of what he started; JoJo White, Roxie Lawson, Sam Clement, Pete Fox, Marv Owen and Birdie Tebbetts.

3500 cycles up to 7000 or 8000 cycles. The quality of reproduction from the Wide Range horn system was excellent and a noticeable improvement in quality was obtained over previous systems.

The next step forward in horn development was the two-way Mirrophonic system. The low frequency horn is called a directional baffle and employs from one to four 18 inch dynamic cone type speakers. Scientific loading has been applied to the cones resulting in high efficiency. The low frequency speaker reproduces all frequencies from 40 to 300 cycles with uniform response. The high frequency horn and unit is revolutionary in its design. The horn is a multi-cellular type, and while there are several models, the horn usually employed is the three by five type. This horn is of exponential design and is approximately three feet long. A new high quality driving unit has been developed known as the Fletcher unit. This unit is a metal diaphragm dynamic type and will handle a large amount of power with exceptionally high quality, reproducing uniformly frequencies between 300 cycles and 8000 cycles per second. One or two of these units may be attached to a single horn. The horn

system is capable of reproducing a frequency range considerably greater than that stated above, but due to certain practical limitations, the range has not been increased. However, as improvements in recording develop, the system is capable of being extended.

In the September issue we will ana-

lyze the new push-pull and ultra-violet recording, and RCA's Hi-Fidelity reproducing units in conjunction with a camera study of the projection room of one of the largest theatres in the East. This will give the comparison of the western type projection rooms and those east of the Mississippi River.

BEFORE THE MOVIES CAME



Two shots from the memory book. On the left is Cahuenga Pass before the picture industry and the state highway program made it a major artery. On right is the site of what now is Universal City. E. Scott Lewis made the shots.

Radio

Film Capital's Position • Mike Fence • Raymond Paige

Hollywood Jump

● Film capital takes leading position as big-time center for emanation of top programs this fall.

With radio insiders predicting that next January will see Hollywood as

the emanation center for close to 90 per cent of the major network programs, the film capital already is assured of a position equal to New York as a first string ether production center at the start of the next big-time show season in September and October.

There are two explanations for the amazing shift, which in two years has lifted Hollywood from just another

tank town in radio to national dominance.

First is talent. Hollywood has it, much more than its radio staple of star names. Advertising agency executives, who are responsible for the production of big-time radio programs, state that Hollywood has all the other talent, too—particularly ace musicians and supporting players. Hollywood today is

THREE FORMER SCREEN STARS DOING REGULAR RADIO STINTS



Once top stars of the screen, a trio of players are making names for themselves in an allied show medium, radio. Jack Mulhall (left) and Francis X. Bushman (right) have been on programs over the Warner Bros. station, KFWB.

Hobart Bosworth (center) has been doing reminiscences of the pioneer days of the motion picture industry on KNX. Before the camera or before the mike it's still trouping to this player trio.

the top spot of the theatrical arts, far ahead of any competition.

Second, there is glamour. Radio can create stars, but it seems it cannot create glamour. Hollywood's glamour in the person of male and female screen stars is admittedly the supreme drawing card in magnetizing radio dials to stay tuned to big programs.

Already assured ace network shows to hit the networks from Hollywood list close to more than 30 and others still are in negotiation. Meanwhile, programs like the Milton Berle Gillette show, Rudy Vallee's hour, etc., will move to Hollywood if their ace star schedules call for picture making.

Among the big programs, which will be heard from Hollywood in the fall, are:

On NBC: Grapenuts, Burns and Allen; Fleischman, Werner Janssen; Jello, Jack Benny; Jergens, Walter Winchell; Kraft, Bing Crosby and Bob Burns; Log Cabin Syrup, Jack Haley; Maxwell House, Showboat, Charles Winniger; Proctor and Gamble (2) The Goldbergs, Jimmie Fidler; Packard, Lanny Ross; Royal Gelatine, Rudy Vallee; Ry-Krisp, Marion Talley; Standard Brands, Bakers' Broadcast; Tenderleaf Tea, One Man's Family (moves from San Francisco); Woodbury, Tyrone Power.

On CBS: Camel, Jack Oakie, Benny Goodman; Campbell Soup (2) Holly-

MAESTRO PAIGE GETS PACKARD SHOW



BRUNO

One of the most personally popular network conductors as well as an outstanding musician is Raymond Paige, who in addition to continuing his ace spot as musical chef of the Friday night CBS Campbell Soup program, takes over the baton for the Packard program Tuesday night NBC when Lanny Ross steps in as star of the fall show September 7. Paige will be the first conductor to handle ace programs on both major networks simultaneously. The musical plugger for soup and motors is a longtime member of the Los Angeles Local 47 of the American Federation of Musicians. Before radio blossomed into bigtime, Paige was popular locally as conductor at the Paramount Theatre. He entered radio via KHJ, when the Don Lee station was on the CBS hookup, and achieved national success with the "California Melodies" and other coast-to-coast programs. He has been maestro of "Hollywood Hotel" for over two years.



Simple as putting erasers on pencils but nobody thought of it as a device for keeping excited radio players from crowding too close to the mike until Hollywood NBC production men had one built for their streamlined Monday night Shakespearean airings. John Barrymore and Elaine Barrie are shown in action with the device, which insures automatic volume control without interfering with the actor's naturalness in putting over a role.

wood Hotel, Ken Murray and Oswald; Chesterfield, Hal Kemp; Cocomalt, Joe Penner; Ford, Al Pearce; Lifebuoy, Al Jolson; Lux, Theatre of the Air; International Silver, film guest stars; Texaco, Eddie Cantor; Vicks, Jeanette MacDonald.

The national trans-continentals on the NBC and CBS hookups are still to be supplemented by the setup of the Mutual network, which with the Don Lee stations entrenched on the coast, is making plans to cut a slice of the Hollywood gravy. Mutual's big specialty is bands and special events, but the junior network plans to invade the Hollywood emanation field this fall, with a

number of deals in negotiation for trans-continental commercials. Likewise, in the smaller stations, radio in Los Angeles is coming out of the nickel-and-dime doldrums with such stations as Hearst's KEHE and Warner Brothers' KFVB, and the smaller stations with which they are hooked up in regional chains, spreading out on showmanship.

KFVB Not for Sale

Rumors that KFVB, the Warner Brothers' Hollywood station, was about to be sold to a major network, were flatly denied last month by Harry M. Warner.

The PHOTOGRAPHER'S Classified Directory

**Brings results—Rates 45 cents per line—
minimum charge one dollar per insertion.
For Rent—For Sale—Wanted—For Ex-
change, etc.**

FOR SALE OR RENT—CAMERAS

FOR SALE OR RENT—Mitchell and Bell & Howell silenced cameras, follow focus. Pan lenses, free head, corrected new aperture. Akeley, De Brie, Pathe, Universal, Prevost, Willart, De Vry, Eyemo, Sept, Leica. Motors, printers lighting equipment. Also every variety of 16 mm. and still cameras and projectors. B & H Cameras with old type shuttles silenced \$150. Bipack magazines and adaptors for color. Everything photographic bought, sold, rented and repaired. Send for our bargain Weltini 35 mm. still camera, complete with coupled catalogue. Hollywood Camera Exchange, 1600 Cahuenga Blvd. Phone HO. 3651. Cable, Hocamex.

TWO BELL & HOWELL CAMERAS complete, Fear movement, very silent—need no blimps. In perfect condition. 50 and 60 cycle motors. Box 775, Hollywood, Calif.

BELL & HOWELL 170° CAMERAS—high speed shuttles—high speed gear boxes—400 and 1000 ft. Bell & Howell magazines—Bell & Howell tripods—motors. **AKELEY** and **DEBRIE CAMERAS**. Akeley motors. High speed motors. Sunshades, lenses and finders.

Write or Wire
CAMERA EQUIPMENT, INC.
1600 Broadway, New York City

Tel.: C1rcle 6-5080 Cable: Cinequip

METAL DEBRIE—Model J. K. dissolving shutter 35-50-75-150mm lenses—Rewind—six magazines, full set matts—Debie tripod—2 cases, all for \$450.00. Eyemo 2.5 lens—case \$110.00.

IRVING BROWNING
110 West 40th St., New York City

REBUILT SILENCED AND STANDARD BELL & HOWELL 170° CAMERAS—Hi-Speed gear boxes—Bell & Howell Hi-Speed shuttles, late model Bell & Howell splicers; Rebuilt Duplex sound and picture printers; pair used Simplex portable sound projectors with 2000 ft. magazines. Bell & Howell 1000 ft., 400 ft. magazines. Motors, sunshades, finders, lenses and all accessories. Write, wire or cable.

MOTION PICTURE CAMERA SUPPLY CO.
723 Seventh Ave., New York City.
Cable: "Cinecamera."

FOR RENT—Fully Equipped Mitchell—Turret Eyemo with motor and 400-ft. magazines. Newman Sinclair 200-ft. spring wind with lenses. Debie Camera, freehead tripods, Portable dolly.

IRVING BROWNING
110 West 40th Street, New York City

DEBRIE CAMERA, Parvo, 8 Magazines, Tripod and Cases, Cost \$1200.00. Will sell for \$200.00. Almost New. Bargains in 16-35 camera. We buy anything.

BLOCK CAMERA
154 East 47th Street, New York

BEFORE MAKING ANY PURCHASE, be sure to see our **Mammoth Bargain Catalog** of cameras, projectors, lenses and gadgets. New, factory samples and close-outs. Liberal trade-in. Ask for Bargain Catalog 537-IP. **IT'S FREE.** **BURKE & JAMES, INC.**, 223 W. Madison St., Chicago. 40 years of satisfied customers.

FULLY EQUIPPED Mitchell—Eyemo Turret—400 ft. magazines—motors—all lenses—Newman Sinclair—200 ft. spring wind—DeBrie camera—freehead tripods—portable dolly.

IRVING BROWNING
110 West 40th Street, New York

NOTICE

Commencing with the September, 1937, issue, International Photographer's Classified Directory will take on a new style and typography as a greater service to readers and advertisers. In addition to our regular classified listings, all display advertisers will receive free listing in classified order in the style shown below, with Name of Firm, Address and Telephone Number. Those who are not display advertisers but desire to keep their Name, Address and Telephone Number before a reader group that dominates the spending of Hollywood's film production budget may do so at the cost of Three Dollars per Insertion.

Sample Listing:

INTERNATIONAL PHOTOGRAPHER
506 Taft Bldg., Hollywood
Hillside 7221

Send Your Copy Now. Accompanied by Cash, Check or Money Order. Deadline for inclusion in the September Issue of International Photographer is AUGUST 20th.

BELL & HOWELL CAMERA No. 604, 35, 50 and 75 mm; Hugo Meyer 1.5 lens, standard B & H equipment and accessories. Price \$1100. Guaranteed condition.

MITCHELL STANDARD SOUND CAMERA, late number Bi-pack equipment. Write for description. Price \$2400.

DEBRIE model JK, metal case, 3 lenses, complete, tripod, magazines, etc., \$500.

AKELEY CAMERA—three lenses, \$800.

CAMERA SUPPLY COMPANY
1515 No. Cahuenga Blvd.,
Hollywood, California

LATE MODEL SILENCED MITCHELL CAMERA—Pan Astro lenses, all accessories, Fearless Blimp, blimp friction head, Mole-Richardson perambulator. Complete unit for studio production.

MOTION PICTURE CAMERA SUPPLY, INC.
723 Seventh Avenue
New York City

Cable: Cinecamera Tel. BRyant 9-7754

ORIGINAL OWNERS—Mitchell Standard Sound Camera, studio equipped with the following accessories: Upright Finder, High Hat, Baby and Reg. Tripod, four 1000-foot Magazines; five lenses, 25, 40, 50, 75 mm.; Astra F. 2.3, 100 mm. Row F. 2.5, X Type Mitchell Motor, Battery Box, Barney and Skirt, Matt Cutter. All the above equipment, including cases, in first class condition. Price \$2750. Box E.K., International Photographer.

FOR SALE—MISCELLANEOUS

LIKE NEW BELL & HOWELL Five-Way Sound Printers and Sound Moviolas. Also Light Testers at reasonable prices. Hollywood Camera Exchange, 1600 Cahuenga Blvd., Hollywood. Cable, Hocamex.

WANTED TO BUY

WE WANT TO BUY ALL TYPES OF CAMERAS

We pay the highest cash prices for Mitchell, B & H, Akeley, DeBrie, Eyemo and other makes of cameras and camera accessories. We also want tripods, motors, magazines, cutting room and laboratory equipment. Tell us what you have! Get our price offer.

CAMERA EQUIPMENT, INC.
1600 Broadway, New York City
Tel.: C1rcle 6-5080 Cable: Cinequip

WANTED—We pay cash for everything photographic. Send full information and lowest cash prices. Hollywood Camera Exchange, 1600 Cahuenga Blvd., Hollywood, California.

**WE PAY CASH FOR
YOUR USED CAMERA, LABORATORY
AND STUDIO EQUIPMENT**

Write, wire or cable
MOTION PICTURE CAMERA SUPPLY, INC.
723 SEVENTH AVE., NEW YORK CITY
CABLE: "CINECAMERA"

WANTED from private owner **LEICA CAMERA** in good condition. Phone HI-5790 after six P.M. or write P. O. Box 313, Hollywood, Calif.

POSITION WANTED

BACKGROUNDS, TRANSPARENCIES, etc. undertaken by first-class cameraman (own Bell & Howell outfit) anywhere in Europe. D. P. Cooper, 151 Kew Road, Richmond, London, England.

FULLY GUARANTEED USED 35 MM. EQUIPMENT

Mitchell, Bell & Howell, Akeley, Debie, Universal, Pathe Cameras.

B & H Eyemo and De Vry.

Portable Sound Recording Outfits.

Holmes Projectors, Sound and Silent.

De Vry Suit Case Model Projectors.

Bell & Howell 1,000 ft. magazines at \$50 each and Bi-pack adapters at \$90 each.

Stineman Developing Outfits, 16 and 35 mm.

*We Buy, Sell and Rent Anything
Photographic.*

CAMERA SUPPLY CO.

1515 No. Cahuenga Blvd.

Hollywood California
Cable Address: CAMERAS

Close-ups

Notes and Comment on Photographer Contributors and Policy

Technical Interest

Eastman's new duplicating film finally received a belated blast of publicity and acclaim in the trade press last month. It certainly deserved splash attention, but it took the trade journals several months to get around to it. Why? The answer is that most editors and reporters whether from the trade or lay press, covering Hollywood, have become convinced that there is little sincere interest in technical phases of the industry. Obviously the technicians are interested; but we are referring now to the executives, directors, writers, actors and other contributors to picture-making, as well as to the general public.

Maybe the general public doesn't give a hoot what genius and skill and painstaking care is behind the manner in which Robert Taylor and Barbara Stanwyck are presented on the screen. But we are far from convinced that the executives, directors, writers, actors and other contributors don't give a hoot. We think they do. We've checked up in a small way.

We sent sample copies of International Photographer to most of the leading figures cited above. We enclosed no come-ons, special offers, etc., nor did we use any direct mail methods to supplement the sample copies. The results were encouraging. Production executives, directors, writers were interested enough to—without solicitation—send in their checks for a year's subscription.

We don't mean to claim that our postman was bent double with the weight of mail from industry tops thronging to become regular readers of International Photographer. But the results were encouraging. We also discovered that the unsolicited subscribers generally were the type known throughout the industry as thoughtful, sincere, creative workers. They were people who respect the medium in which they work and their persistence in this belief has won them respect.

And that brings us to the moral of our little tale, which is that International Photographer is unique, the only publication of its kind. Once a month it comes around bringing news and pictures of the technical end of the motion picture industry. General news, gossip and propaganda are out. Its aim may seem narrow to some, but we believe that there are many people in the industry who will appreciate just such a publication as a supplement to their other reading. If you don't know whether you're one of that group, just send along your two-fifty and you'll find out in a year's time.

You won't find the dope on the latest merger, the lowdown on the latest romance, or the high spots of the latest controversy. But you will find the news

of new film, new cameras, and equipment, new technical methods, new ideas on sound, color, laboratory methods, lighting, sets, projections, television and a host of other things—published before the general press gets around to it. You'll find it told briefly and to the point, accurate enough to be authentic, simple enough to be readily understandable.

Series on Process

It is a distinct pleasure to announce a new series of articles on what is undoubtedly one of the most important technical branches of the industry—process photography. The magic of process and special effects work has played a major role in lifting the motion picture to the realm of a high art form. No small part has been played by George Teague, who developed the rear projector transparency process and is internationally known as one of the high authorities in the field.

Starting in an early issue Mr. Teague will present a complete history of process and special effects, illustrated from his own files and those of a number of major companies. It will be a series that many will wish to preserve, since it will be the first authentic story ever published of this important branch of picture-making.

More Allison

Also, in our next issue, our Contributing Editor, D. K. Allison, noted chemical engineer, will be represented with an article on color that will clear away many misconceptions on the subject.

Knows His Sound

J. E. Ney is the pen-name of a member of Sound Technicians' Local 695, IATSE, a new contributor to International Photographer with this issue. Mr. Ney's understandable style is as valuable a contribution as his obvious knowledge of his subject. His information on Sterophonic sound recording—a potentiality of the future—is a clear exposition of what was hinted at by H. C. Silent of ERPI in his interesting paper on sound at the summer convention of the Society of Motion Picture Engineers.

Introducing Petersen

International Photographer's many readers in the commercial and other non-theatrical fields frequently request articles bearing on the practical aspects of major studio production as they may be related to the problems encountered in their own work. This month's article by Gus Petersen, Local 659, IATSE, is a starter in that direction. It is intelligently to the point. We expect to

publish more such articles by Mr. Petersen and other able IA members.

New Program

Every manufacturer of equipment used in motion picture making will undoubtedly be keenly interested in Mr. Aller's announcement on Page 9 of our contemplated Technicians' Jury method for exploiting the news and factual background of new equipment and materials.

Mail Bag

Missing Words Mixup

In your issue of July, 1937, in the Mailbag Column, there is a picture of the Cine-Kodak Special over the heading, "Meyer Reflex Focuser." This is accompanied by a letter by Mr. Lewis Muscat of Hugo Meyer and Company. In Mr. Muscat's letter, there is the following sentence, "As you doubtless know, when a 200-foot magazine is used on this camera (Cine-Kodak Special) the photographer is unable to use the reflex focusing device of the camera itself."

If you will turn to page four, you will find our full page advertisement of the Cine-Kodak Special, from which it is quite obvious that the reflex focusing device can be used with the 200-foot chambers just as easily as with the 100-foot chambers.

Mr. Muscat is probably referring to the Reflex Finder Image Magnifier which, as its title implies, is an accessory device which merely magnifies the image of the reflex finder and allows this image to be viewed the right way up from the back of the camera.

As Mr. Muscat's statement is liable to be taken literally by people unfamiliar with the Cine-Kodak Special equipment, we shall be grateful if you will make this correction.

Yours very truly,

EASTMAN KODAK COMPANY.

V. Rayment,

Cine-Kodak Sales Division.

Mr. Muscat obviously meant to add at the end of his quoted statement the words: "from the rear;" and ye careless editor failed to correct the omission.—Ed.

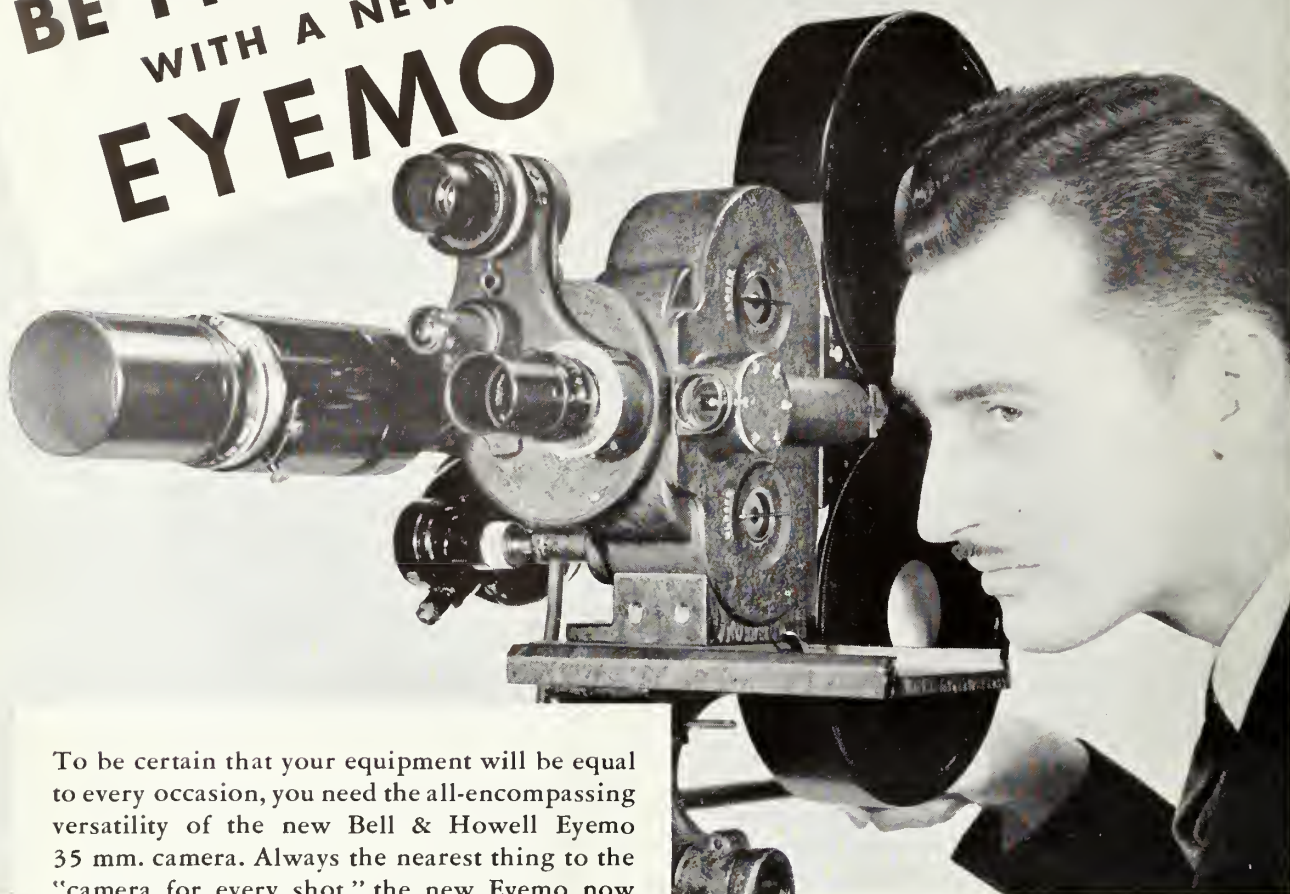
Another NEW TRIUMPH By EASTMAN—

● When Eastman Fine-Grain Duplicating Films are used, the “dupe” in the vault is the actual equal of the original in the laboratory. These new Eastman films are vital safeguards of motion picture quality. Get acquainted with them as soon as possible.

J. E. BRULATOUR, INC.

FORT LEE • CHICAGO • HOLLYWOOD

BE PREPARED WITH A NEW EYEMO



To be certain that your equipment will be equal to every occasion, you need the all-encompassing versatility of the new Bell & Howell Eyemo 35 mm. camera. Always the nearest thing to the "camera for every shot," the new Eyemo now brings you these advantages:

HAND CRANK ON EVERY MODEL in addition to powerful spring motor eliminates necessity for stopping to wind motor. Especially valuable where electricity is not available for optional motor drive.

MOTORS INTERCHANGEABLE because the motor mountings are so accurately machined. Motors can be purchased separately at any time and installed by the owner, and one motor can be used interchangeably on several cameras. Universal, 12-volt, and synchronous motors available.

S. M. P. E. STANDARD SOUND aperture plate and matching-drum type variable viewfinder on every Eyemo except the lowest-priced model—permits sound to be added to film made with the

Eyemo, using standard recording and printing equipment.

ACCURATE SPEED, FASTER PICKUP insured by an improved, vibrationless, high-speed type governor, sealed in steel, permanently protected from dust and moisture.

CHOICE OF TWO three-lens turret heads—compact or offset type. The offset type (pictured) permits using without interference a wider selection of lenses, and is accompanied by a prismatic focusing magnifier aligned horizontally with the photographic aperture.

These and other features of the new Eyemo will help you hurdle every handicap.

Write for completely descriptive Eyemo literature.

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1849 LARCHMONT AVENUE, CHICAGO

New York: 11 West 42d Street • Hollywood: 716 North La Brea Avenue • London: 14 Great Castle Street

Established 1907

BELL & HOWELL

September-1937

25 Cents

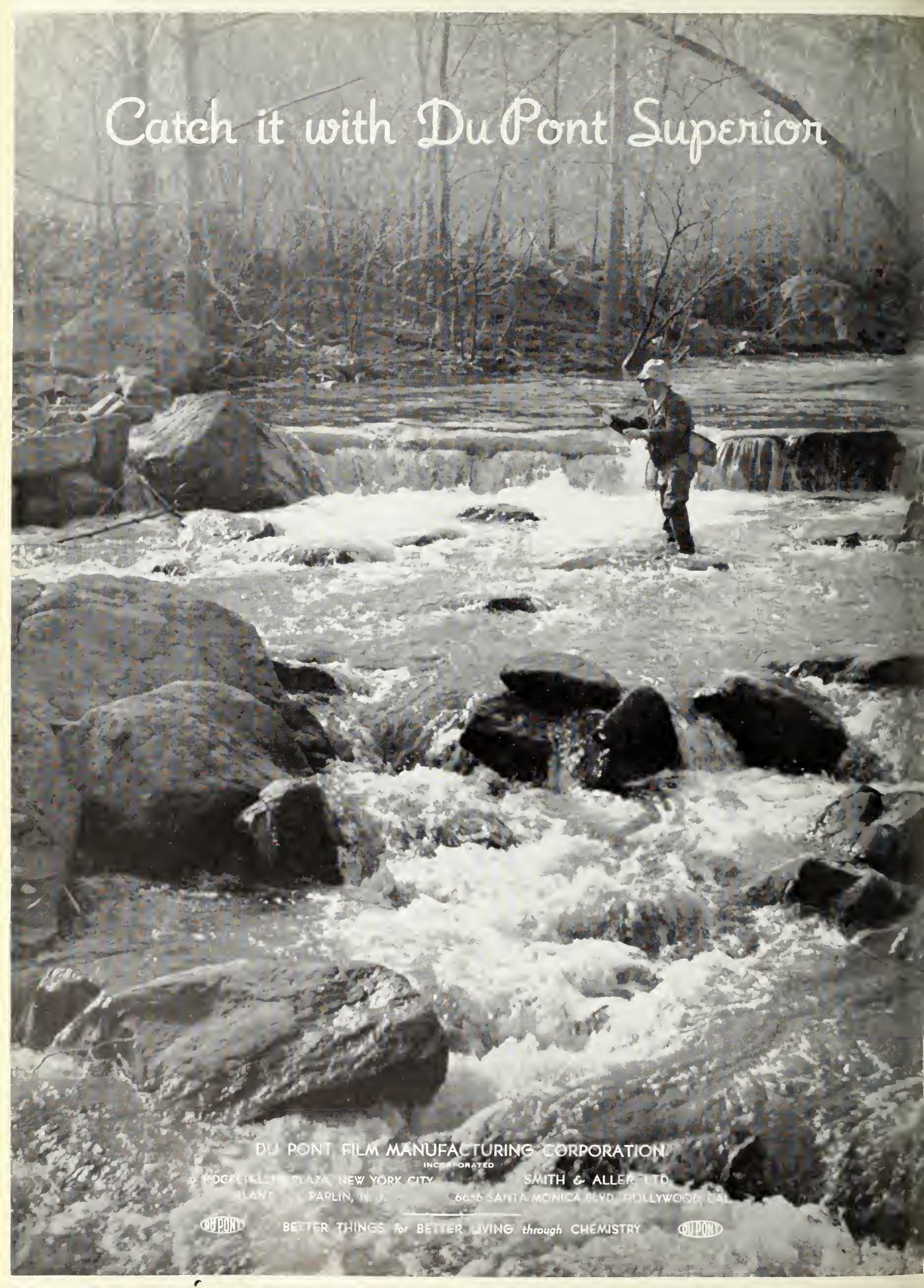
International PHOTOGRAPHER

Vol. 9

A JOURNAL OF MOTION PICTURE ARTS AND CRAFTS
Hollywood, California

No. 8

Football and Films
(See Camera)



Catch it with Du Pont Superior

DU PONT FILM MANUFACTURING CORPORATION
INCORPORATED

4 ROCKEFELLER PLAZA, NEW YORK CITY
PLANT FAPLIN, N. J.

SMITH & ALLER LTD.

6615 SANTA MONICA BLVD. HOLLYWOOD, CAL.



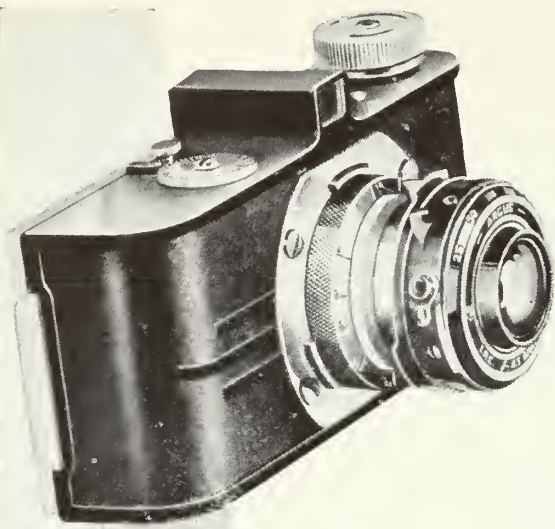
BETTER THINGS for BETTER LIVING through CHEMISTRY





20th FOX TOURISTS Members of the company headed by Mrs. Osa Johnson, snapped en route to their current three months' location jaunt into Africa for "Stanley and

Livingstone," which Darryl Zanuck plans as a smash production. Here at the Acropolis in historic Athens, Mrs. Johnson is seen fifth from right in both pictures. On her left in both shots is Director Otto Brower. The company will attempt to record photographically as much as possible of the route followed by Stanley in his historical relief expedition.



argus

P H O T O G R A P H Y

In offering the new model AF, Argus makes another outstanding contribution to the camera industry. This Argus candid camera will add to Argus' existing reputation for photographic equipment and accessories of high quality at low cost.

NEW ARGUS MODEL AF

With Precision Focusing Mount—Illustrated

(All other specifications same as Model A)

Permits critical focusing from infinity to 15 inches without use of portrait or copying lenses **\$15⁰⁰**

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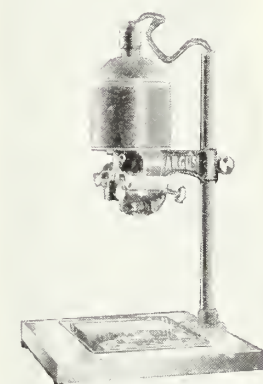
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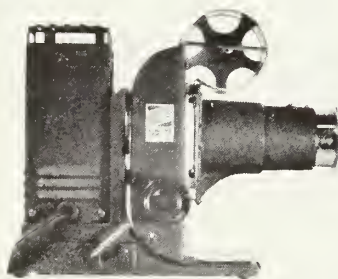
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International PHOTOGRAPHER

A JOURNAL OF MOTION PICTURE ARTS and CRAFTS

Vol. 9

Hollywood, September 1937

No. 8

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A Monthly Journal Dedicated to the Advancement of the Motion Picture Industry in All Its Branches: Cinematography, Professional and Amateur; Photography, Lighting, Process, Sets and Decor., Laboratory and Processing, Film Editing, Sound Recording and the Allied Arts and Crafts of Theatre Projection and Operation.

The International Photographer, as the official publication of the International Photographers, Local 659, a part of the International Alliance of Theatrical Stage Employees and Motion Picture Machine Operators of the United States and Canada, not only represents the entire personnel of photographers now engaged in professional production of motion pictures in the United States and Canada, but also serves other technicians in the studios and theatres, who also are members of the International Alliance, as well as executives and creative artists of the industry.

CONTENTS

TRADEWINDS	5-6-7-8-9
Stillman Forgets His Tools	
Common Sense of Color	
CAMERA	9-10-11-12-13-14-15-16-17-18-19
Football and Films—1937	
Curtis One Shot Three Color Camera	
Color Stills Program	
Photog Notes	
PROCESS	19
New Projection Printer for Color	
SOUND	19-21
Volume Level Accuracy	
ERPI's New Hollywood Building	
Multiple Rewind Device	
CINEMATOGRAPHER'S BOOK OF TABLES	20
BIG PICTURES	22-23
"100 Men and A Girl"	
LIGHTING—SETS	24-25
Rennehan Talks Technicolor	
NEW PATENTS	25-26-27
LABORATORY	27-28-29
Negative-Positive Color	
PROJECTION	30-31
End-Traveller Effects	
Cramer's Illness	
Standard Filter Nomenclature	
CLASSIFIED DIRECTORY	31-32

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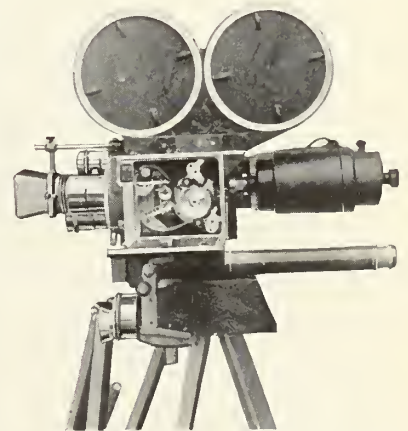
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3

Close the cover as you would a book, pull the finger tab to "Run"—you're set to shoot.



International PHOTOGRAPHER

A JOURNAL OF MOTION PICTURE ARTS AND CRAFTS

Vol. 9

No. 8

Tradewinds

STILLMAN FORGETS HIS TOOLS

The following story by John LeRoy Johnston, Managing Editor of HOLLYWOOD, SCREEN BOOK and SCREEN PLAY, is undoubtedly the most provocative, if not the most constructive, discussion of the Hollywood still picture situation that we've ever read. We are certain a majority of our readers will agree. The subject is so important INTERNATIONAL PHOTOGRAPHER welcomes further stirring of Mr. Johnston's hornet's nest. The author is as well qualified as any living person to speak his mind openly on the subject. This winter he starts his 28th year in motion picture work. His first theatre press agent job was at the age of 13, when he already was writing sports and movie news for an Eastern newspaper. Later he was publicity director for several theatres, then 43 theatres, then 72. He went into branch exchanges, New York offices, more theatres and 17 years ago he became a studio publicity director for the first time. During his years in Hollywood he has been publicity director for Ince, for Frank Lloyd, Corinne Griffith, Mack Sennett, Edwin Carewe, Carthay Circle, for seven years publicity director for Universal and he has had other experience at MGM, Warners and First National. At one time or another half of the studio stillmen in Hollywood have worked with him and with pictures his passion he has personally posed, checked negatives and prints in many thousands. Now as an editor he is compelled to be even more discriminating in selecting still pictures that sell millions of magazine readers, prospective customers of movie houses. We induced him to write this article because we felt sure he would have something pertinent to say. He fulfilled our expectations.—Ed.

"Stills are a great deal better than they used to be!" you hear folks say on occasion and then one day you go looking for something that will symbolize some new picture or fittingly illustrate some certain important scene and then—you learn a lot about stills. While you're looking through the Hollywood files, hopelessly, there are important exhibitors, editors and showmen in hundreds of big cities all over the world searching just as hopelessly. What they say about such a condition will probably never be printed in this book. Their remarks probably aren't fit to print. And if you go a little further into the matter you're bound to wonder "Why?" It may seem sarcastic but the simile is apropos. The situation is identical to the plumber who arrived to fix a leak but forgot the proper tools.

Criticism of studio stills doesn't deal so much with the stillman as it does his equipment. Like the plumber without proper tools the stillman (the very finest stillman) cannot remedy the situation. That's why this jibe is written.

Has it ever occurred to you (you technically minded gents in pictures) that while movie cameras have changed completely; bearings and gears have

been silenced; the entire system of studio lighting has changed and film made faster; the actual improvements in still cameras hasn't amounted to a generous 25 per cent? We mean the routine 8x10 camera equipment which must turn out a bulk of the pictures which sell a billion dollar industry to the purchasing public the world over.

Why? Ask yourselves.

The 8x10 camera is the most essential in studio work because 50,000 theatres demand 8x10 contact stills cheaply for lobby displays; because the 8x10 still comes closest to magazine size and because the 8x10 negative permits best retouching results and because world demand makes it economically ridiculous to make anything but standard sized contact prints in volume.

The Leica camera, the Contax and other "candid cameras" have been accepted and rejected a half dozen times and are now enjoying their greatest vogue but no serious minded publicity director, photographic director or editor will tell you that enlargements from these small films offer the equal of the 8x10s for a hundred different reasons. Inability to properly retouch these small candid films or to make good copy negatives from enlargements

(eliminating grain) has caused far more the destruction to necessary movie illusion—picture beauty and perfection—in the past three years than these fast little cameras have brought advancement through "fast action" shots. The 4x5 Graphic and Graflex have been a boon to action photography and have served their purpose well but they have many disadvantages which cost studios thousands of dollars each year without providing the theatre man or the editor (so necessary to proper picture exploitation) what they need.

I have heard a hundred arguments and know of a dozen so-called photographic experts who claim they can eliminate grain completely in enlarging tiny films and 4x5 negatives, but when you see the grief engravers have with the grain that actually remains in these "grainless" prints you can see the shortcomings of the best demonstrations. Since the real value of still pictures comes from their reproductive quality—a quality that should permit a coarse screen newspaper cut to run off half a million impressions and thus "sell" twice that many prospective movie patrons—uniformly sharp stills are very necessary. Not 20 per cent of the stills made in Hollywood today are actually good engraver copy. Engravers will tell you so in no uncertain terms. Making reasonable allowance for so-called "arty" stills and some action shots still being acceptable for theatre lobby displays and limited reproduction in small magazines printing on flat-bed presses, it can be honestly said that at least 50 per cent of all Hollywood stills are a waste of time and money because their quality is not uniform; they are not sales copy; and they are not proper representation for the finer movies they are created to "sell." Hollywood stills are not made for scrapbooks or studio office frames, but to intrigue millions of fans into ticket buying, into making idols of film personalities.

I am not a technician. I wouldn't attempt to tell you the difference between an f:4.5 lens and a 6½ Hokey Pokey special (except on the bill) and I cannot tell you how the still camera may be improved to meet the rapidly increasing demand for more and better 8x10 stills but I do positively believe an improved camera can be made. They laughed at men experimenting with sound films and cameras but those men revolutionized an industry, killed off the so-called "legitimate theatre" and made movies the greatest art of expression in the history of mankind. Every studio employee has seen changes in movie camras occur in a single year that even expert cameramen said would never happen. Necessity IS the mother of invention and I am stubborn enough to believe that if a few interested technicians and manufacturing experts made up their minds to do it that a new



KAHLE

MCAPLIN

These scenes from big picture exploitation still series illustrate one major point made in John LeRoy Johnston's accompanying story. All pictures in this layout are interesting, likely to get attention from lobby audiences or editors. Yet the more easily obtained novelty stunt, off-stage pictures like those on page 7 (from 20th-Fox's "Heidi" and "Love at Work") heavily predominate over the scenes of

still camera could be available within a short time; a new camera that would come closer to filling all the needs of the stillman than the three or four cameras of various sizes now necessary to enable him to hold his job. It doesn't seem a futile hope; it can be done.

What I see (if you'll bear with my untechnical description) as the ideal studio still camera for the future is an 8x10 box made of some extremely light metal, like that used in airplanes, with fastest possible lenses set in aluminum, not being tracked out of the main box but rather operated like a swivel lens extension. A camera with a silent focal-plane shutter that will work at a speed of about 1/500th. In addition I see the films, about 18 of them in a light duralumin septum or on large rolls that can be wound up (as in a candid camera). Naturally this will require the solution of many problems. Don't think movie camera technicians didn't wear their hair thin seeking the answer to their problems. I think the noisy shutter can be eliminated or at least improved. I think a still camera which is in form an 8x10 Graphic CAN be created.

Once it is created the industry should unanimously adopt it and then begin a campaign to educate directors and assistant directors in the very essential art of helping stillmen make better stills; a campaign to permit stillmen to make action shots during final rehearsals of scenes or while scenes are being made; a campaign of co-operation with stillmen; a campaign of tolerance and understanding to replace the too frequent ignoring of the stillman by temperamental and officious assistants. It is peculiarly true (and distressing) that only a few directors realize that the fruits of their labors MUST BE SOLD IN ADVANCE THROUGH STILLS lest their producers run out of money for more pictures and more salary checks. And what is true of directors is all too true of many assistant directors who feel their principal function

is to keep the stillmen from making pictures. (I write from experience.)

Then the industry will do well to create a school or forum discussion for educating stillmen as to the reasons for making stills; the markets for them and the necessity for stillmen becoming not mere bulb-pressers but rather pictorial reporters—historians—picture exploiters. The wide-awake stillman finds a great romance in cameraing through a picture, building up a collection of photos that tell not only the movie story but the off-stage story, and without destroying the illusion that makes the motion picture a business rather than just a novelty.

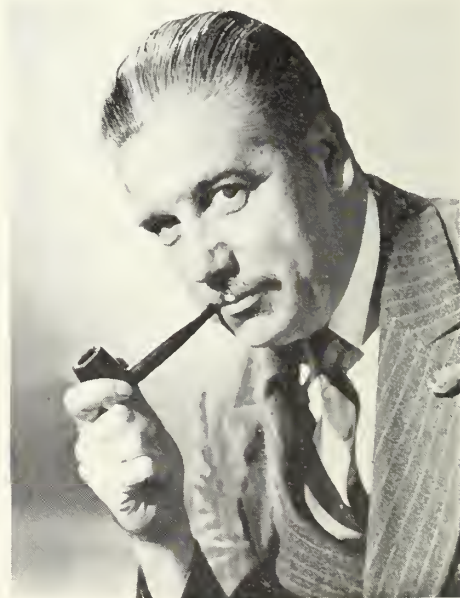
This still business hasn't really started yet, believe it or not.

The past two years has seen a great advancement, 50 per cent greater demand for stills than ever before but, believe me, the still picture field is REALLY in its infancy.

In resume of the present situation the average studio stillman shoots 125 to 150 8x10 stills per production and on special pictures frequently two and three times this number. Supplying the demand for exclusive art takes 25 per cent of these. In the New York offices the set prepared for exhibitors' campaigns is seldom more than 40 to 50 stills; which means that about 50 per cent are waste of time and effort. Of the 40 to 50 sent to branch exchanges for exhibitor campaigns not more than 25 are worthy of lobby display and not more than 15 ever reach newspaper engravers. Of the 25 per cent given to magazines for gallery or illustrative art about 25 per cent are acceptable and less than ten per cent create any enthusiasm. In some respects these estimates are generous. The result is that a larger percentage of off-stage pictures are printed than production pictures and, when you analyze it just what have the stills sold to the public? Certainly not much of an appreciation of a production as such. The savings in waste in the present sys-

tem (or lack of it) would well pay for experiments in new camera equipment.

I know of several studios which give present day stillmen 1915 and 1920 still camera equipment and then expect stillmen to turn in a perfect job. It can't be done and until the stillman gets improved standard camera equipment that will function well as fast



COLUMBIA PUBLICITY now is headed by Fred Stanley, veteran of motion picture publicity and trade journal work and author of several screen stories and plays. Stanley's taking over of the post last month at the Gower Street studio, succeeding Bill Thomas, another author-publicity man, was the first change of major studio press department chieftains in almost a year.



UGRIN



CRAWLEY

story value dramatic action such as those on page 6 (from Samuel Goldwyn's "Hurricane" and Paramount's "Wells Fargo"). Plaint of theatre-men and editors is that most of the action stuff doesn't have the punch to compel people to want to go see a particular picture.

112 MOTION PICTURE NEWS



ALL PERMANENT successes in motion picture production have been founded on the greatness, the vitality and power of the play. Directed by public. After centuries no one has improved upon Shakespeare's. For play the stage.

GOLDWYN PICTURES will link the greatest play with that of only the first magnitude in the ranks of the theatre and the screen.

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SAMUEL GOLDFISH, Pres.; EDGAR SELWYN, Vice Pres.; ARTHUR HOPKINS, Asst. Pres.; CHAS. B. GAILL, Treas.



Be sure to read in MOTION PICTURE NEWS when making up advertising

LEO'S GRANDPA. Over 20 years ago, March 13, 1917, the progenitor of Leo, MGM's now familiar-roaring lion trademark, first greeted the motion picture industry in the above advertisement, reprinted from Motion Picture News, now absorbed into the Quigley trade paper setup. Leo's sire was quite dignified, sitting in aristocratic disdain, accompanied by an open-mouthed stooge to suggest his eventual roar. The advertisement, which announced the formation of Goldwyn Pictures, is also interesting in that it stated two decades ago Samuel Goldwyn's policy of emphasizing the story over all other elements in his productions. With minor changes to bring it up to date it would be excellent advertising copy today.

as he thinks the waste now prevalent will continue and the steadily improving movie product cannot be properly exploited. That this industry—the world's foremost photographic business—should have so stupidly failed to improve its still equipment is rather amazing.

Neither studios nor stillmen can cause 50,000 theatres to abandon their costly standard display ideas so they must conform to present needs. Since magazines and newspapers must print pictures more and faster; since print paper is always an uncertain quantity and since all forms of reproduction costs are mounting the only sound solution is to develop, improve and stead-

fastly maintain a higher, more efficient STANDARD for still making.

It is up to studios to give stillmen a break and it is up to stillmen to advance in thought and action with the times. Stillmen can't stand still.

After you've studied about 75,000 still negatives and many more prints each year for 15 or 16 years you become quite critical. And when you are willing to give a magazine page worth \$2,500 at advertising rates free in exchange for a "stop page" still and you can't get what you have a logical right to expect—well, you write an article like this and hope the right persons read it.

John LeRoy Johnston.

COMMON SENSE OF COLOR

(A roundup of latest color news published in the July issue of International Photographer created considerable discussion in the trade, particularly with regard to a number of flat statements of a news scoop nature on actual up-to-the-minute developments in the march of color. Our headlong leap into the mess of theory and propaganda to state flatly that if color soon reaches a commercially practical status it will be free of mumbo jumbo and will be virtually the same as black-and-white production with regard to its effect on methods and on present talent personalities and technical workers provoked numerous requests for further clarification and explanation of the subject.

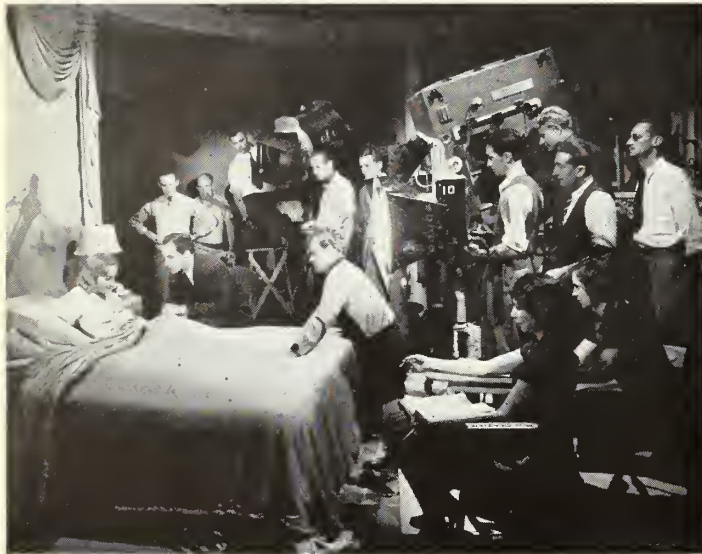
Answering these requests, we follow our color news symposium with a keen analytical discussion from an eminently practical viewpoint by Donald K. Allison, outstanding research chemist and a contributing Editor of International Photographer, of the basic factors behind the latest color news. It should interest everyone in the picture indus-

try, from top executive to the creative workers and technicians.—Ed.)

One of the most avidly discussed problems in the motion picture business today is the future of colored motion pictures and their effect upon the industry. Several times within the past few years it has seemed that the color was about to sweep the industry, but at no time has it seemed more likely than at present.

There are at least two reasons why this is particularly true. One is that color photography is finally reaching a degree of perfection commensurate with commercial operations, and the second is that color is the white hope of the picture business in competing with and delaying the general advent of television. Black and white television is an actuality, and may seriously compete in the very near future with black and white pictures, while color television is still not realized and will probably require many years to perfect.

Throughout all of the discussion of



These coincidentally alike production stills are from two big Technicolor features: (left) William Wellman, directing Carole Lombard and Fredric March in Selznick International's "Nothing Sacred"; (right) Irving Cummings and Ray Rennehan, author of a story on Technicolor photography

in this issue of International Photography, meditate over the angles on Joan Bennett for Walter Wanger's "Vogues." Both Rennehan, and author Allison of the accompanying story emphasize that color, when practical, is no threat to existing personalities or technical workers.

color, an analogy between color and sound is repeatedly drawn which is false in many of its precepts, and which can lead to many incorrect conclusions. For example, both the trade and news-press have repeatedly carried publicity stories fostering the belief that the advent of color will mark the doom of many reigning favorites in much the same manner as sound pictures displaced many of the silent stars. The fallacy of the analogy should be at once apparent.

Silent stars were chosen for personal attractiveness and pantomimic ability, and not for trained speaking or singing voices. As a result they were in general totally unprepared to meet the new set of requirements of the audible screen. On the other hand a beautiful woman or handsome leading man who photographs well in black and white should certainly reproduce just as well or better in color. Here there has been no change in the medium of production, but only a more accurate and fuller rendition of the good features of the player.

Of course, some have said that color is hypercritical of bad features; that shadows are accented, that makeup cannot conceal bad photographic features as effectively from the color camera as from the old black and white film. Bleached or dyed hair, they say, cannot be photographed, darkened tooth enamel cannot be photographed, etc., ad infinitum. Most of these assertions are far-fetched and ridiculous.

The most brutal photographic medium ever devised was the early monochromatic negative. With the greatly increased fidelity of color rendition of the panchromatic film universally used today, quality of reproduction has constantly improved. Why then should the next forward step into natural color photography result in anything but even more greatly improved rendition of the players? And by players we mean all of the players.

Why should a color process be tolerated which photographs kindly only blonde beauty, and will not pleasingly reproduce the brunette and titian? It is a physiologic fact that the pigmentation of the auburn type differs markedly from the pigmentation of the blonde.

It is just as true that the pigmentation of the evergreen forest differs fundamentally from the pigmentation of the flowers of the Alpine meadow nestled in its shadow; yet the color process which finally meets the industry's approval must photograph one as well as the other. Should not this same film and process reproduce the beauties of human subjects without preference for some particular coloration; granted of course that seldom do we encounter in humanity that complete flawlessness which delights us in simpler Nature. However, here again the makeup which has come so many times to our aid in black and white work again rises to the rescue in color work, with the distinction that in the color photography of tomorrow, correction of physiognomic defects will be even easier to achieve than in the older monotone picture.

It is interesting in this connection to note that the trend in color makeup is very definitely away from the bizarre combinations affected by the color directors in the past. Color makeup is rapidly approaching a quality of makeup for normal visual beauty and the relationship of this aspect to the requirements for the successfully commercial color process was previously reported in International Photographer, June, 1937.

The analogy between sound and color has been likewise extended as the basis for widespread belief that the general advent of color into the motion picture industry will result in another major upheaval of the technical organizations of the studios similar to that of ten years ago. However, a close study of the development toward commercial color motion picture photography leads us to believe that development of color motion pictures is proceeding along different lines and that the transition will be practically painless. The factors which contribute to this opinion are many.

Motion picture color photography has had a history of gradual growth and improvement over a period of many years, as contrasted with the frantic rush for sound which followed the brave, "double or nothing," venture of the pioneer sound studio. When sound broke

upon a startled and speechless industry there were only two commercial sound recording systems available (Vitaphone, and General Electric) and many months elapsed before any other possibilities were even considered. Needless to say, those early sound units, scarcely beyond the experimental stage, required corps of technicians to maintain and operate them with anything approaching the desired results. Sound recording and reproduction is primarily electrical and acoustical as contrasted with the photographic background of Hollywood technicians.

In the early days of sound only a handful of men in Hollywood had the remotest idea of the principles of sound. Radio itself had scarcely emerged from the crystal-detector stage and men trained in the intricacies of vacuum tube technique were few indeed. Yet from this small group as a nucleus, the industry was in a few months, able to swing into practically one hundred per cent sound production schedules.

Color, on the other hand, is primarily photographic, and in addition to the thousands of experienced photographic black and white technicians the gradual development of color pictures has resulted in a situation where there are dozens of capable cameramen who have had production experience in color, some on several different processes, and probably several hundred laboratory technicians who have operated in color laboratories and who will, therefore, more than fill the needs of the color era. Compare that early sound situation, in which there were only two companies with meagre equipment immediately available, with the present color set-up in Hollywood.

Outstanding, of course, both from the standpoint of quality and volume of product as well as experience is Technicolor. This company has been processing features since long before the advent of sound. In the two-color field we have Cinecolor, Magnacolor, Dunning, and Vericolor, all of which companies are manned by staffs who have had in excess of five years experience in production scale color operations. Quantity of work alone would lift any of these processes out of the

experimental classification, and many of them have announced that they are preparing to offer three color processes within the near future. The combined twenty-four-hour capacity of these laboratories could, if required, handle the entire production schedule of Hollywood and there is little reason, therefore, to fear that the advent of color will introduce fundamental changes in the studio organization.

In addition to these production laboratories, Eastman's Kodachrome, DuPont's Dufaycolor, and Keller-Dorian's lenticular film, all offer additional possibilities for studio color within the next few months. Several of the recently developed super-imbibition processes such as Neochrome and Irix, as well as the Gasparcolor and Detracolor processes employing multiple emulsions offer further advancements. Agfacolor also is emerging from the laboratory. The outstanding success which the first named three processes have enjoyed in the amateur field again lends signal support to the contention that color processes will shortly reach a stage of development substantially as simple, and very nearly as inexpensive, as black and white has been in the past.

Color has been a particularly sore spot to many producers because of the concomitant evils of color experts, cameramen and directors, whose mysterious abracadabras have been an apparently unavoidable complication of color production, yet it is difficult to rationally see just why this should be necessarily true. Many detractors to the contrary, top-notch cameramen and directors of black-and-white pictures today are superlative artists, and probably more so than many of their contemporary color specialists who do not understand the medium of motion pictures. Does it not seem strange that these recognized black-and-white artists apparently can think only in monotone, or is not the fact more likely that these eminently experienced experts can compose, light, and photograph a scene for action, set, and color, just as efficiently as the specialized talent? Finally, then, does it not devolve upon the color laboratory to give the industry color photography which will reproduce upon the screen the visual effect of the original, sans all tricks, sans all special "effect" lighting?

Logical consideration of the basic facts of the color situation leads to the inevitable conclusion that commercially practical color will and must be a medium so flexible that the set designer, the costumer, the make-up artist, the electrician, the cameraman, the direc-

tor and the stars can plan and execute a scene to the best visual effect, confident that their efforts will be carried undistorted to the screen. It is toward this end alone that the leaders in color progress all are working.

D. K. Allison.

Camera

FOOTBALL AND FILMS - 1937

King Football steps on the gridiron this month and already the sports pages are filled with the annual statistical barrage that accompanies the autumn sport. Sizes, weights, records, attendance, ticket grosses and the cost of silken pants, get their usual play in the preliminary publicity buildup before the real action starts. Not generally known is the fact that King Football annually involves the expenditure of over \$5,000,000 in photographic activities related to the pigskin sport.

Hollywood's major studios, with their annual outlay of well over \$2,000,000 for fall release of pictures with football emphasis, contribute the major share. The balance is made up of the production costs of short subjects and news-reel coverage by the far-flung army of IATSE cameramen, plus a heavy expenditure by the colleges in sub-standard motion picture coverage of their games.

Football games are photographed in 16 mm. for two reasons, sentiment and the modern coaching technique. Most big schools want photographic records of historic contests. Most coaches want

slow-motion records of the mistakes of their own players, the tricks of their opponents.

This season photography of football will take on an added spurt, due to many athletic conferences letting down the bars on photographic scouting to varying degrees. That the camera is no mean factor in football strategy is emphasized by Norman Sper, Los Angeles statistician and syndicate writer, whose reports are published by many newspapers, and whose pre-game predictions are aired on national radio programs.

"Cotton Warburton, All-American open-field runner of University of Southern California is a great example of what can happen to a grid star after the camera record of his feats has been analyzed," Sper says. "Warburton, who is now carving out a career in pictures as a film editor at MGM, drew national attention in 1931-32 with his sensational runs, but late in the season of 1932 California caught up with the midget star, bottling him up except for one long run and the following season other coast teams solved his



MARION



GRAYBILL

Football grabs attention for this month's front cover, and the accompanying story reveals interesting slants on film coverage of the pigskin pastime. Edward Killy, RKO-Radio director (left) is "coaching" the boys on scenes for the company's annual football picture, "Saturday's Heroes." Cotton Warburton (center oval), USC All-American, now a film editor at MGM, is one of the outstanding bigtime grid

stars whose open-field running tricks were revealed to opposing teams by photographic scouting with slow motion cameras. The three madcap Ritz Brothers (right) made sure there would be no interference with their lateral passing so they played a game with themselves in the Los Angeles Coliseum and ran up a terrific score sans opposition or audience. They're in 20th Century-Fox's "Life Begins in College."

slippery tactics, centering around his phenomenal ability to suddenly relax when tackled. Opposing coaches took his technique apart in slow motion studies and trained their players to off-set Warburton's cunning."

Bell & Howell and Eastman dominate the sub-standard sports field with their high type practical 16 mm. cameras, while well over a million dollars' worth of cameras and other motion picture equipment is owned by the universities and colleges and today no important grid team is without its camera coaching session. Many of the big schools, which have cine departments, go in for handling all angles of the photographic records for football and other sports, thus assuring students of practical opportunities to learn picture-making technique.

Illustrative of the amount of raw stock used for sports records is that over \$5000 worth of film was used last season in photographing USC's football games and practice by George Sherlock, Los Angeles independent producer and the school's cine workers.

USC struck out on a new path last season when Don Hooper, member of Local 683, IATSE, who photographs for Sherlock, shot the entire USC-Notre Dame game in the Los Angeles Coliseum in natural color 16 mm. Kodachrome. Arnold Eddy, graduate manager at USC, is very enthusiastic over last year's Kodachrome results and hopes university authorities will permit him to use Kodachrome exclusively for game coverage this year. Hooper explains that shooting the entire game in Kodachrome was not practical up until the time that Eastman came out with their new two and four inch f:2.7 long focus lenses.

Since colored jerseys of many teams photograph in black-and-white with very similar tone quality, the natural color photography, as evidenced by the beautiful shots of the maroon clad Trojans and the green-and-white jerseyed Irish obtained last year, permit much clearer study of complicated action.

While tipoffs on opponents' style of play are valuable, big benefit of the photographic checkup, according to Coach Francis A. Schmidt, of Ohio State, which meets USC in Los Angeles in October, is in studying "our own weaknesses."

Schmidt uses Bell & Howell equipment and in addition to the continual checking of current games photographically, he like many other coaches, also has adopted the practice of preparing special films, featuring outstanding players going through all "fundamentals" of football, and these are run frequently for the players to supplement coaching instruction on the field.

In photographing football games during the fall a number of important points to remember, according to C. E. Brackett, writing in *Filmo Topics*, are:

- (1) Never take a scene slower than 32 frames per second;
- (2) Start the camera at the end of the huddle and continue until just after the whistle blows;
- (3) Get as high and as far away from the play as possible and use a four or six inch lens;
- (4) Have the camera on a tripod;
- (5) If there is any chance of error in exposure have it lean to under-exposure.

An average of 2000 feet of film is required to photograph every play of an entire game at 32 speed, and this type of coverage requires that two or three cameras be used and an assistant to change the film, etc.

A four-inch lens shooting from the 50-yard line above the press box at the Los Angeles Coliseum, includes an area of about twelve-and-one-half yards in the center of the field and on the close side; fifteen yards on the far side and close ends of the field. A six-inch lens at the same place takes in around twelve-and-one-half yards in the far corners. Advance checking of a particular stadium should be made in advance so that information of this type is at the command of the cameraman.

The reason an under-exposed picture is preferable to an over-exposed in football photography is the above-mentioned fact that uniforms of most teams are not readily distinguishable and many of the colors that record darkly on film will blend in with the grass color if there is over-exposure.

Another important injunction is to keep the center of the action on the left side of the view-finder if the motion is directed toward the right; and the reverse if the motion is directed toward the left. This insures a better chance to see what might happen instead of getting the results of what did happen, Brackett points out.

It is generally recognized that for football photography a cine-camera with speeds of 16, 24, 32 and 64 is ideal. While for most scenes 32 is satisfactory, for analytical checkups of action, 64 is best. Obviously a fast lens, f:1.9 or f:1.5, is advisable, particularly during fall with its uncertain light possibilities. Films to be used should be checked with experts according to local weather conditions as savings can be effected by using the cheaper emulsions under ideal conditions.

One stunt that allows saving in film

is to use the cheaper panchromatic film for the start of the game, when the light generally is good, then switch at half-time to Super Pan and for the fading light of the last quarter to use the special fast films now available.

Both Bell & Howell and Eastman offer a number of special features for their cameras for use in improving their efficiency for sports photography.

Prime consideration in football photography, however, is the intelligence and imagination of the photographer. Knowledge of plays, formations, strategy and playing style of the teams, advance planning of the game and advance thinking on every shot will produce good results. The "perfect" football photographer should be able to think as fast as the coaches and players of both teams.

Naturally, a camera with a movable lens turret is a must for football photography and advance setting of the proper lens and advance planning of the technique to be used on pan shots will capture many a sensational sequence that otherwise would be missed.

On passing and kicking plays, the photographer must decide before hand whether he desires to follow the ball or move to the possible receiver. Last second hesitancy between the two usually results in getting neither.

It generally is wise when a long pass or kick is almost certainly indicated to have longer range lens ready and the minute the play starts to be prepared for an instant decision on which action to center on.

Again on first to third down when the action is such as between free passing teams each with a skillful pass defense, and always with the possible threat of a broken field run, a shorter lens which will catch more action is advisable, and best results will be obtained by following the action start of the play and switching immediately to the possible receiver area in event of a pass. This will get more real action than trying to follow the ball.

Expert news-reel photographers find that they must use a much different approach to such razzle-dazzle teams as Southern Methodist, Colgate, Ohio State and Texas Christian, than in photographing the more traditional styles of Pittsburgh, Notre Dame, USC, UCLA, Stanford, etc.

While each autumn Saturday will produce its crop of "astounding" upsets, due to the increasing parity of strength between so many teams, no chance of defeat menaces the heroes of motion picture football action and currently several dozen stars are moving toward inevitable "winning plays" that will snatch defeat from victory in the final reel in the Hollywood studios.

This year, the film companies will offer seven feature films capitalizing on the country's annual pigskin excitement. At the 20th Century-Fox, a lavish musical, "Life Begins in College" carries the box-office ball for the Darryl Zanuck outfit. MGM has "Navy Blue and Gold," while the company's big musical "Rosalie," also has football sequences; and a Pete Smith short, showing how the Green Bay Packers, professional champs, do their stuff, is ready for release. From RKO-Radio comes "Saturday's Heroes," and from Warners-First National "Over the Goal," supplements a big college musical with a smash football dance finale stunt in the Fred Waring picture, "Varsity Show." Paramount, like MGM, goes Annapolis with "Hold 'Em, Navy."

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Carole Lombard, while playing in "Nothing Sacred" for Selznick International has a chance to inspect the new Curtis type "K" Color camera. Dr. Thomas C. Curtis is explaining the separation of light by mirrors in large picture above. The inventor is seen in his Huntington Park plant making laboratory tests of



the new camera (large oval) and demonstrating it to Fred Parrish, Selznick International studio stillman, and a member of Local 659, IATSE (small oval).



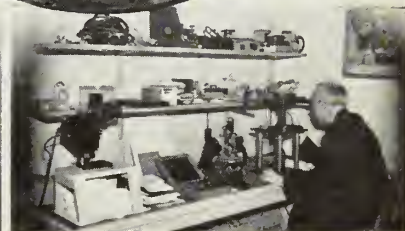
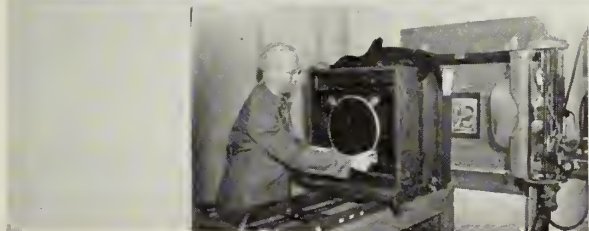
Dr. Curtis is seen (above left) using the fotomicrograph camera at his very complete laboratory to check a projected image from a national magazine color print to determine the reasons for false color in either the printing plate or the printing. (Top right) Don Hooper, member Local 683, IATSE, and author of the accompanying story, is shown the Curtis system color printer for making separations of Kodachrome and Dufaycolor. (Bottom left) Focusing in the modern new color camera is done from the ground glass in the rear of the camera. (Bottom right) In the Curtis system unusually careful checking is made of the glass which is micrometer matched in sets of three to be used as pressure plates in the registering film holders.

CURTIS ON

The Thomas S. Curtis Laboratories of Huntington Park, California, are internationally known for their development work in industrial processes and products, and among their clients are many of the largest and most important industrial concerns in the United States. Many widely sold and nationally advertised products are made under license of patents issued to Dr. Curtis, Director of the laboratories.

For many years Dr. Curtis has been a consultant in problems arising in color photography as applied to scientific and technical uses, and more recently in the graphic arts. The broad experience built into Curtis Color Cameras embraces not only theoretical considerations, but also practical features which make for continued success in the use of this equipment in the field where conditions frequently are far different from those in a testing laboratory.

Dr. Curtis has developed what is known as the Curtis Color System, which is result of some fifteen years of continuous scientific and practical research, the objective of which is to evolve a method whereby flat copy, living models, tri-dimensional set-ups or other color objects may be reproduced as photographic prints on paper or on the printed page by means of photolithography or photo-engraving with a minimum of color correction and fine etching time and without loss of the true photographic quality and rendering which it is so difficult to preserve where extensive tone modification is practiced by the color etcher.



The Curtis camera manufacturing plant (large picture above) and (circle) Dr. Curtis, photographing standard color chart used for checking color separations, tone gradations, grey scale balance, registration and evenness of illumination of the Curtis color camera shots. Small pictures below show

(left) setting up the half-tone screen for process reproduction; (center) checking the pH of wash water for dye printing; (right) the spectrometer is used to check the transmitted wave-lengths of printing inks or filters.

HOT THREE COLOR CAMERA

The system was developed initially for reproduction of technical and scientific photography in natural color. For the past ten years much of the natural color photomicrography appearing in scientific magazines throughout the world has been done by this system.

In 1931 at the urgent request of several nationally known photographic color illustrators and the advertising

agencies they serve, Dr. Curtis entered the field and introduced the first Curtis direct color cameras intended for commercial rather than scientific work. These cameras were based upon the same principles which had proven so successful in technical work but were made more rugged to adapt them to the rigors of photography on location and under conditions less favorable than

those obtaining in a research laboratory. Since that time some 58 Curtis cameras have entered the commercial field and at the present day an impressive percentage of the direct color work appearing in the national magazines and on the nation's billboards is done with Curtis Commercial Color Cameras.

During this period of commercial de-



Dr. Curtis looks over a day's run of dialith color prints (left) and (right) is shown giving them a careful once-over with the binoocular microscope for quality of color separation. Unusual precautions to insure the greatest possible


accuracy and frequent means of checking up on the various stages in the complicated system of obtaining color with the new type one shot camera, mark the Curtis system, which includes much more than mere camera design.

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velopment, Curtis Laboratories has had the enthusiastic cooperation of both lens manufacturers and emulsion makers. Special runs of new and improved emulsions are being sent to the laboratories monthly. As a result of this close cooperation an entirely new system of color separation and direct color camera design has been evolved with elimination of most of the known faults in previous methods.

Curtis Color Camera Type "K" is the direct result of this lengthy investigation. For the first time the commercial photographer is offered a three-way, two-mirror full reflection direct color camera embodying all of the conveniences and flexibility of the commercial view camera. The Type "K" Curtis Camera is a 5x7 instrument, is made entirely of aircraft duralumin and as an illustration of the precise engineering design built into this instrument it may be mentioned that every ounce of the aluminum alloy entering into the construction of the Type "K" has had identical metallurgical history. That is to say the entire chassis or optical frame work of the camera is built from one length of duralumin angle.

The mirror support is built of another continuous length of duralumin strip of an alloy having a slightly lower co-efficient of expansion than the frame, thus insuring that the mirror support constantly will be in slight tension, obviating dangers of lack of registration due to unequal expansion of the frame. Mirrors are held in a resilient mounting to permit expansion and contraction without distortion. Filters contain no gelatin, the coloring dye being in solution in a water-proof gum, which gum forms the cement for the ground and polished optical glass carrier.

So precise is the optical and engineering design of the instrument that the color back may be swung upon the view camera frame either from side to side or vertically and the lens board may be raised or lowered without destroying registration.

Film holders for the sensitive negative material are matched in groups of three and the film is held under pressure plates of ground and polished water-white plate glass which are also matched for thickness, flatness and color in groups of three. Thus one of the besetting evils of direct color camera photography—faulty plate holder precision—has been eliminated.

A number of accessory specialties have been developed to assist the commercial color worker, facilitating the operation of making separation positives, color proofs and color prints.

The Curtis Color Printer is made in 5x7 and 8x10 sizes and in general design resembles a contact printer. The unique feature, however, is a registering aperture plate of ground and polished glass upon which may be placed in succession three color separation negatives and in succession may be printed therefrom a single piece of reseau film containing the additive color dot formation, thus affording a means of taking a direct color proof from three separation negatives in approximately 15 minutes elapsed time. This quick proof serves as a guide for subsequent printing operations enabling corrections to be made for faulty lighting, exposure, etc., without going through the expensive operation of making a large color print to determine the success of the exposure.

A second useful purpose of the Curtis Color Printer is to make contact positives either on film, plates or paper

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for subsequent reproduction by any of the standard half tone processes.

A third and exceedingly valuable feature of the printer lies in the inclusion of a rotating filter carrier built so as to register three filters in succession over the optical axis of the illuminating system making possible the direct separation of Agfa plates, Dufaycolor film or Kodachrome film by contact in a matter of minutes instead of hours. All screen plate and film reproductions are made with negatives not only in perfect register insofar as the image is concerned but also in register in respect to the edges of the separation negatives as well. Special means are provided for obliterating the reseau or screen pattern in Dufaycolor film with this printer.

Extra filters are supplied to afford the exact filter cut required for separation of each of the standard color film systems. These filters are changed in a few moments without disturbing the optical precision of the instrument.

Another accessory of great convenience to color workers is a system of bracing for standard enlarger equipment to insure accurate register. This bracing system locks the lamphouse, lens board and printing easel in exact alignment once focus and placement of the copy have been effected. An accessory that goes with the rebuilt standard enlarger is a printing frame fitted with ground and polished plate glass and backed with three aluminum buttons that permit the frame to be placed back in the exact position with respect to parallelism of frame and negative in the enlarger thus further insuring accurate register.

The final accessory which is almost an essential in every color printing laboratory is an auto transformer with a special load switch with eight voltage steps. This transformer which is usually supplied with an accurate volt meter enables the color printer to maintain an absolutely constant voltage at all times during the printing operation and thus facilitates the duplication of color prints after a test has been made to determine correct exposure. A variation of as little as three or four volts on the line may bring about a disastrous change in color value on a large and expensive color print after the initial test has been made.

Returning to the Curtis system itself, a feature is that through use of a unique filtration system which is balanced for three special emulsions—each one of which is highly sensitized to the particular band it is intended to record and rendered lowed in sensitivity to the other two bands—a very sharp cutting separation is obtained at high speed. The special emulsions are available through the Defender Photo Supply Company at standard emulsion prices and by special arrangement between Curtis Laboratories and the Defender Company sensitometric tests are made on each emulsion number as it comes from the factory.

Net result of this combination which is available only in the Curtis Color Camera Type "K" is a direct automatic color separation on flat copies such as water colors, paintings, drawings, etc. Equally faithful and sharp cutting separations are made on objects in relief such as living models, flowers, fruits, vegetables, still life subjects, sport scenes in bright sunlight, etc., etc.

With these new emulsions, the Curtis Color Camera Type "K" operates at a speed of Weston 8 in photoflood or

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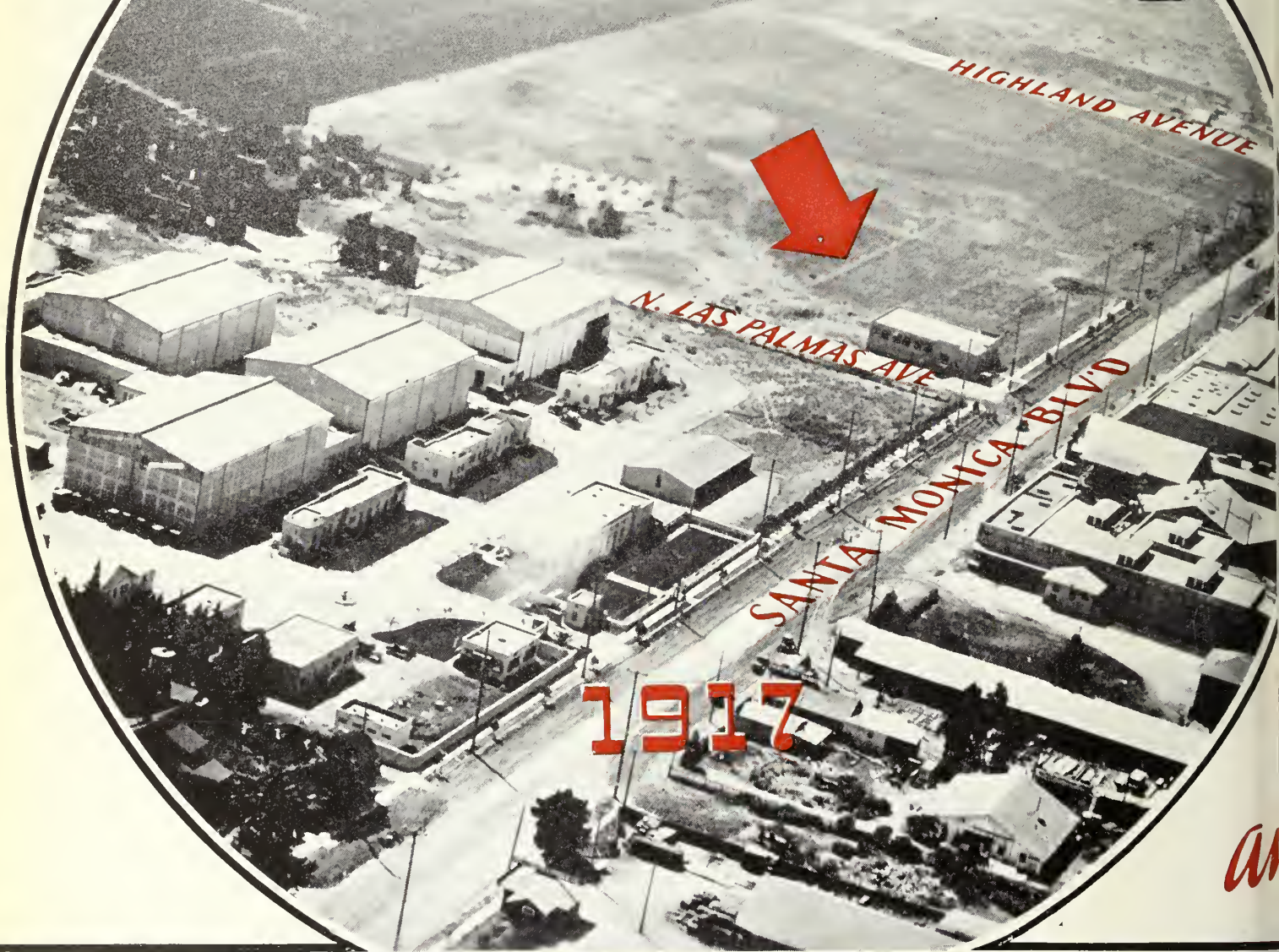
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movieflood light. In daylight the speed ranges from 5 to 7 Weston depending upon the density of compensating filter to correct for color value of the light. Filters for daylight take care of normal, blue and golden-red typical conditions.

Having obtained properly color-separated and beautifully balanced negatives in the Type "K" camera the next step in the Curtis system is to make black and white enlargements on paper which has been treated to preserve register—with a choice of five grades of contrast in the emulsion with four grades of contrast in the developer—it is possible to make correctly scaled reproduction positives from negatives made under widely varying conditions of illumination and lighting contrasts.

The black and white positives which are the photographic equivalent of bromide paper enlargements subsequently become the basis for all later operations. These master black and white prints form the copy for the making of printing matrices for the Curtis "Dialith" printing process (which will be fully explained in a future issue of International Photographer) or to be sent to photo-engravers and lithographers and subsequently printed.

Keynote of the entire Curtis system is practicability. Of course, results are contingent upon good sound color photography in the first place. Lighting must be correct for color and the usual precautions to maintain fidelity of the lighting spectrum, must be followed. The system is not intended to overcome mistakes of incompetent photographers. While an enormous control may be exercised, true function of the system is to extract the greatest beauty and value from a well made, well lighted and well composed set of color separation negatives.

Don Hooper, Local 683, I.A.T.S.E.

Photog. Notes

Charlie Boyle with a crew consisting of Fred Ditmers, Al Clive and Lee Davis left last month on an extensive tour of the United States shooting location scenes for one reel and two reel Technicolor shorts and a four reel black-and-white production for the U. S. Steel Company, produced by Roland Reed, who hadquarters at the Selznick International lot. Boyle will shoot the color and M. A. Anderson, assisted by Dave Smith, will handle the black-and-white. All are members of Local 659.

Tony Kornman, member of Local 659, IATSE, has severed his connection with the Camera Supply Company of Hollywood to resume camera work.

Victor Haveman, Local 659, noted for his unusual Contax and Leica shots, has been engaged by LIFE to do all their pictures in the film studios.

Color Stills Program

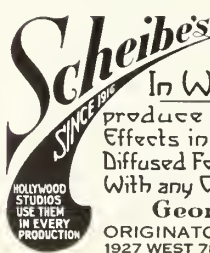
With demand for color stills for newspaper and magazine reproduction reaching sensational proportions, Selznick International and 20th Century-Fox, working separately in cooperation with

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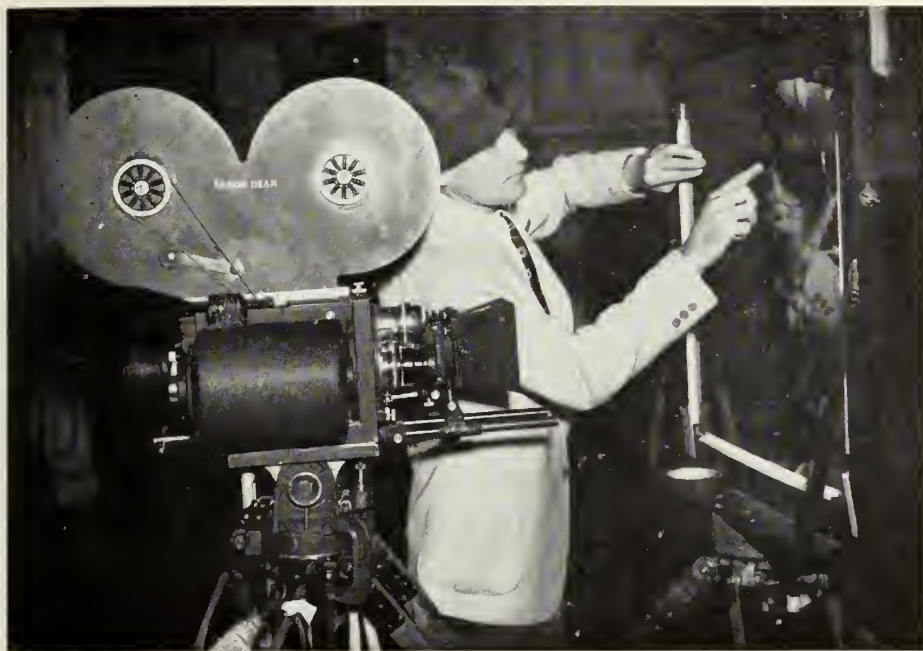
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Jack Cosgrove, head of Selznick International special effects department, with new projection background printer for color.

Western Lithograph's color experimental laboratory, headed by Don Hooper, Local 683, IATSE, and MGM with its new color research laboratory, costing over \$110,000, which was completed last month, are taking leadership in attacking the problems involved. International Photographer in cooperation with the manufacturers and studios, will present full news coverage of the program. This issue presents details of the Curtis one shot camera, which has been used in the Selznick-Western Litho experiments. Next month we will feature articles on Kodachrome action stills obtained by Hooper and Fred Parrish and the setup of the MGM color still department.

Process

Color Printer

Construction was completed last month on a new type projection printer which will radically revolutionize color, process photography.

Machine-made, from designs by Jack Cosgrove, head of Selznick International's special effects department, the new mechanism makes it possible to produce in color virtually every special effect known to black-and-white photography. The new printer was completed after a year's experimental work. "Nothing Sacred," co-starring Carole Lombard and Fredric March, was the first film to make use of the latest development. Cosgrove, whose contract was renewed recently by David O. Selznick, was enabled to finance his experiments on the new printer through company subsidy.

Sound

Volume Level

In order to fully utilize the greater volume range capabilities of the newer Mirrophonic and Ultra Violet Push-pull recording systems, it has been found necessary to improve the older volume level indicators.

The greatest step forward in this field was the introduction, a year or so ago, of the Weston high speed meter movement which allowed more accurate determination of sound peaks. Recently still more improvements have come along which will help the mixer to work closer to the overload point of the recording system without danger of overload "crack-up". At the SMPE summer convention this year (International Photographer, June, 1937) several papers were presented on useful improvements in volume indicators, and these papers are appearing in current issues of the SMPE Journal. The August issue contains a good summary of the NT problem by F. L. Hopper of ERPI. His paper describes a rather new peak reading level indicator, notable mainly for its high speed operation with slow restoring so that the needle "hangs on," after swinging up to a peak.

A great deal of work has also been done in the studios in obtaining a linear decibel scale on the level indicator. Perhaps the outstanding development in this respect is the volume indicator developed at United Artists by Fred Albin. Level changes of about 20 db are easily readable directly without using a meter multiplier. This allows the mixer to keep track of low level dialogue that ordinarily is unreadable on the conventional level indicator. This new linear scale indicator is also very useful in dubbing, where the mixer wants to maintain a fairly constant level of

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The CINEMATOGRAPHER'S BOOK of TABLES

By Fred Westerberg

Cameramen Should Add These to Their Red Books

EQUIVALENT CAMERA DISTANCES 16mm. FILM

CAMERA DISTANCES REQUIRED WITH VARIOUS LENSES
TO OBTAIN THE SAME HEIGHT OF FIELD

Height of Field In Feet	FOCAL LENGTH OF CAMERA LENS							
	15mm.	20mm.	1 In.	35mm.	2 In.	3 In.	4 In.	6 In.
	DISTANCE IN FEET FROM LENS TO SUBJECT							
1.0	2.1	2.8	3.5	4.9	7.0	11	14	21
1.5	3.1	4.2	5.3	7.3	10.6	16	21	32
2.0	4.2	5.6	7.0	9.7	14.1	21	28	42
2.5	5.2	7.0	8.8	12.2	17.6	26	35	53
3.0	6.3	8.3	10.6	14.6	21.2	32	42	63
4.0	8.4	11.1	14.1	19.5	28.2	42	56	85
5.0	10.4	13.9	17.6	24.4	35.3	53	70	106
6.0	12.5	16.7	21.2	29.2	42.3	63	85	127
7.0	14.6	19.5	24.7	34.1	49.4	74	99	148
8.0	16.7	22.2	28.2	39.0	56.5	85	113	169
9.0	18.8	25.0	31.7	43.8	63.5	95	127	190

For higher values move decimal points to right.

CAMERA DISTANCES REQUIRED WITH VARIOUS LENSES
TO OBTAIN THE SAME WIDTH OF FIELD

Width of Field In Feet	FOCAL LENGTH OF CAMERA LENS							
	15mm.	20mm.	1 In.	35mm.	2 In.	3 In.	4 In.	6 In.
	DISTANCE IN FEET FROM LENS TO SUBJECT							
1.0	1.5	2.1	2.6	3.6	5.3	8	11	16
1.5	2.3	3.1	4.0	5.4	7.9	12	16	24
2.0	3.1	4.2	5.3	7.3	10.5	16	21	32
2.5	3.9	5.2	6.6	9.1	13.2	20	26	40
3.0	4.7	6.2	7.9	10.9	15.8	24	32	47
4.0	6.2	8.3	10.5	14.5	21.1	32	42	63
5.0	7.8	10.4	13.2	18.1	26.4	40	53	79
6.0	9.3	12.5	15.8	21.7	31.6	48	63	95
7.0	10.9	14.5	18.5	25.4	36.9	55	74	110
8.0	12.4	16.6	21.1	29.0	42.2	63	85	126
9.0	14.0	18.7	23.7	32.6	47.4	71	95	142

Based on projection aperture .284 by .380 of an inch.

CAMERA IDENTIFICATION MARKS 16mm. FILM

IDENTIFYING MARKS MADE ON EDGE OF FILM BY VARIOUS
MAKES OF CAMERAS AT THE TIME OF EXPOSURE
Reversal Positive — Emulsion Down — Picture Erect

CINE ANSCO	CINE KODAK MODEL-A	KEYSTONE	
AGFA ANSCO	CINE KODAK B-6.5	KINATONE	
AGFA MOVEX 16-12	CINE KODAK B-3.5	CINE NIZO	
AGFA MOVEX 30	CINE KODAK B-1.9	PARAGON	
AGFA RISDON	CINE KODAK BB-3.5	PEKO	
BANGS-BERG	CINE KODAK BB-1.9	Q.R.S.	
B&H FILMO 70	CINE KODAK MODEL-K	RCA (SOUND)	
B&H FILMO 75	CINE KODAK MODEL-M	RUBY	
B&H FILMO 121	CINE KODAK SPECIAL	SIMPLEX POKETTE	
BERNDT (SOUND)	MAGAZINE CINE KODAK	STEWART WARNER	
BOLEX	CINE KODAK MODEL-E	VICTOR EARLY MODELS	
DE VRY		ZEISS IKON KINAMO	
ENSIGN		ZEISS IKON MOVIKON	

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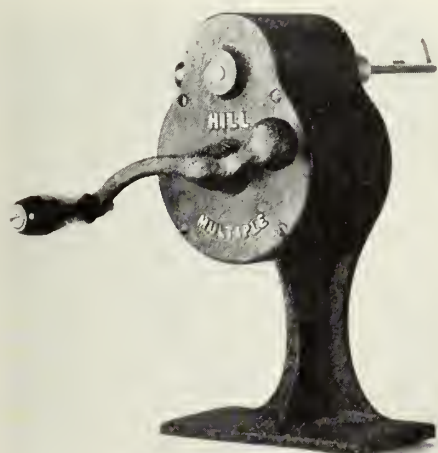
background music or sound effects, such as rain. While most mixers have, of necessity, been forced to train their ears to judge the amplitude of low level and background sound, a reliable and definite meter reading is the only way to get good day to day, consistent re-setting of the gain in order to avoid differences between adjacent scenes.

The description of the exponential amplifier used in the Albin level indicator has not yet appeared in the SMPE Journal but it should appear in an early issue.

J. N. A. Hawkins, Local 695, I.A.T.S.E.

ERPI Moves In

The job of moving ERPI's Hollywood headquarters from the Professional Building to their new structure at Romaine and Seward Streets got under way just as International Photographer went to press and executives announced they expected to be in shape for an official opening late this month. The new layout of the sound organization consists of a two story office building, two story warehouse and laboratories and a 100 seat laboratory theatre.



HANDY DEVICE of interest to laboratory workers, soundmen and projectionists, is the Hill multiple rewind, now on the market again after a patent litigation victory by its designer, S. Morgan Hill, member of Local 13, IATSE. The rewinder, in several models (two reel illustrated above) will handle two films at once and keep them in sync, also is geared to permit rapid change to rewind either the inside or outside reel separately and conveniently.

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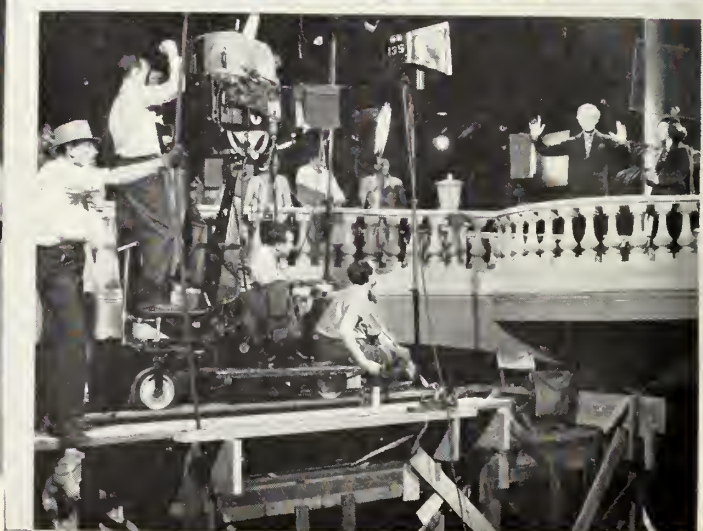
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**OCTOBER
ISSUE**

Big Pictures



Pictures in this layout of novel stills and production scenes from Universal's hit picture, are by Ray Jones and Roman Freulich, who are both members of Local 659, IATSE.

"100 MEN AND A GIRL"

Teaming the famed symphony conductor, Leopold Stokowski, with their youthful singing star, Deanna Durbin; Universal is counting on a smash hit in "100 Men and a Girl," previewed late last month to enthusiastic notices. The production is the second from the team of director Henry Koster and producer Joe Pasternak, whose unusual production "Three Smart Girls," carved a starring niche for Miss Durbin. Joseph Valentine photographed the film; which is from an original story by Hans Kraly, with screenplay by Charles Kenyon.

A fine name support cast includes Adolphe Menjou, Mischa Auer, Eugene Pallette and Alice Brady. The story is tailor-made to suit the talents of the conductor and the youthful singer with a number of unusual twists in treatment. Opening with John Cardwell (Adolphe Menjou) an out of work musician, and his daughter, Patsy (Deanna Durbin); about to be evicted from their boarding house for \$52 back rent, the story gets under way with Cardwell trying desperately to land a job.

But when he tries to see the great conductor, Stokowski, to apply for a position in his orchestra, he is thrown from the symphony hall for his persistency. As he leaves the auditorium, he finds a woman's purse, well filled with bills.

When he tries to return it at the box office, the manager thinks he still is trying to get into see Stokowski, and again throws the luckless musician into the street. Cardwell takes the purse home, and pays up the back rent. He tells his daughter he has secured an engagement with Stokowski, and that their troubles are over. That night they celebrate their good fortune. But John cannot deceive his good friend, Michael (Mischa Auer), and explains to him how he found the purse. The friends agree that they will continue to deceive Patsy to keep her happy as long as they can.

Patsy discovers the deception when a collector comes to take the piano for non-payment and she rushes to Stokowski's rehearsal room to get the money from her father, to find that he is not there and has never been a member of the organization. Faced with the truth, Cardwell confesses his deception.

Patsy returns the purse to its owner, Mrs. Frost (Alice Brady), an eccentric society woman, who, when she learns that there are hundreds of musicians out of work, flightily offers to sponsor a symphony orchestra. Patsy tells her father the good news, and he and Michael gather together 100 musicians. They rent a garage for a rehearsal hall and are happy until the owner demands his rent. Patsy goes to Mrs. Frost's home, only to discover she has gone to Europe.

Mr. Frost learns that his wife has told Patsy that she will sponsor the orchestra, and though he thinks it quite a joke, he says he will back the orchestra and put it on the air—provided they can get the great Stokowski to conduct.

Patsy gets an audience with Stokowski, who after hearing her sing, asks her to come again. She does—with her 100 musicians. Stokowski hears them play, and then conducts them in a great Wagnerian concert for a smashing and musical happy ending.



Lighting-Sets



Ray Rennehan and Director Irving Cummings, shooting scenes from Walter Wanger color film, "Vogues," with Helen Vinson, Warner Baxter and Jerome Cowan.

RENNEHAN TALKS TECHNICOLOR

Ray Rennehan, ace of the Technicolor photography experts, and a veteran member of Local 659, considers the photographic essentials of Technicolor camera work in one of the most practical and informative discussions, particularly with regard to lighting, yet published.—Ed.

All that is needed to strip the so-called mystery from color camerawork is to consider it from the same practical viewpoint we ordinarily use in discussing black-and-white. Not so long ago

every detail of our routine black-and-white camerawork was at one time shrouded in mystery; today, experience has made them accustomed commonplace. And that same experience ap-

plied to color will make it commonplace, too. There are many little ways in which we can make any kind of camerawork easier or more effective by simply sidestepping the difficult or impossible things.

Color can be approached in the same way. If the cameraman will keep alert, he can discover many little practical tricks, which not only make his color scenes better, but also enable him to accomplish them more easily.

Modern Technicolor is photographed under arc lighting. This in itself should be no difficulty to the competent cameraman. Nine years ago the industry took without faltering a sudden change from arc to incandescent lighting. In turning to color, the reverse of this transition should be easy.

The chief reason for Technicolor's use of arc lighting is in the fact that any color process must take into consideration not alone the intensity, divergence and diffusion of its lighting, but also the color of the light used. If the light varies appreciably from the colorless white standards of natural daylight, that variation will be reproduced on the screen. The arc lamp is inherently closer to that standard than any other type that can be used for pictures. A program of extensive research, carried on jointly by the Technicolor staff, the National Carbon Company and Mole-Richardson, Inc., has given us arc lighting units whose light is an almost perfect match for natural light. The low intensity "Side Arc" floodlighting units produce light that needs no correction to match this standard. The high intensity "H. I. Arc" spotlighting units, since high-intensity arcs produce an inherently more bluish ray, require a very light straw-colored filter to match this daylight standard.

This brings us to one of the first points the color-cameraman must watch. Occasionally the best of electricians will accidentally leave the correcting filter off one of his lamps. Unless the cameraman has schooled himself to be as conscious of the color of light as he is of intensity and diffusion, the omission may escape attention until the rushes are screened. Then it shows up as a distinctly bluish beam striking unnaturally onto set or player. It requires only a little practice, however, to be able to glance at a set and notice this all but invisible fleck of steely blue; I have been repeatedly amazed how quickly cameramen and gaffers previously unaccustomed to color have learned to note such details. Soon they do it almost subconsciously.

The matter of lighting level has been argued too often both in and out of print. Each cameraman balances his lighting differently, and determine his own favorite lighting level. Just as in black-and-white it is impossible to say that one man is right and the other wrong, because they use different light levels to secure comparable effects, so it is impossible to say how much or how little light must be used from any one source on a color shot. Successive advances in both emulsions and laboratory technique have brought Technicolor lighting requirements progressively closer and closer to parity with comparable monochrome.

In this phase, too, we are aided by the fact that, unit for unit, the "H. I. Arc" spotlighting units used for color are considerably more efficient than most of the lamps used for black-and-white. They throw smoother, more controllable beams; they are, in fact, arc versions of the familiar incandes-

cent "Solarspots." Unit for unit, the modern Technicolor set uses no more light-sources than would be necessary for black-and-white; in some cases, thanks to the more efficient light-distribution of our lamps, we can use fewer sources.

The fallacy that color must be lit flatly has now been pretty well exploded. Some of the flatness in the early three-color pictures was due to the early limitations of higher light levels and to the fact that in those days the present modern lamps were not available.

In actual fact, Technicolor scenes can be lit with much the same range of flatness or brilliance that would be desirable for the same scene in monochrome. In so far as my personal preferences go, I prefer to light Technicolor scenes with a bit more contrast than I would use in black-and-white.

A great deal of the contrast as well as the intensity of lighting required for color scenes can be governed by the cameraman's choice of set-ups. This is noticeable in black-and-white, but it is still more evident in color. Often moving the camera a scant few feet one way or the other can make a tremendous difference in the lighting required, saving both time and current in notable amounts.

In black-and-white the cameraman, after a brief outline of the nature of a shot, can often very safely leave the details of camera set-up to his operative crew while he concentrates on lighting. In color, this is not the case. This is not said with any sense of slighting the abilities of the operatives, but simply because the combination of color with line, mass and lighting requires more precise planning than do the three latter factors alone.

My personal method is to plan the set-up very precisely by inspection through a detached finder, thereafter indicating to my crew the exact position of the camera to get the desired composition—the camera's position, its height from the floor, the exact angle, and so on.

In a color film, the background as a rule plays a much more important part than it does in black-and-white. An area of some strong color here, another one rendered too vividly there, can upset an otherwise very effective composition. This fact is something the cameraman coming newly into color from black-and-white must learn to consider in detail. Ordinarily, such a splash of color might, in black-and-white, be rendered as an inconspicuous neutral gray. In color, it would be rendered as color—possibly as objectionable color.

This planning requires careful co-operation from the director. If he will really cooperate with the cameraman and understand his problems, he can often move his action, and with it the camera angle just that little bit to one side, or closer to the wall, farther out, etc., and thus do much to greatly simplify this problem of color composition enormously.

I have found it very helpful to plan my background (or set) compositions first, quite independent of the principals, and then to fit the players into the compositional pattern, rather than to strive to coordinate two otherwise conflicting units at once.

Closely related to this is the matter of set dressing. In monochrome, an over-dressed set is not often noticeable. In color it will be. Actually, the sim-

pler a color set is dressed, the more effective will be the picture on the screen. Genuine cooperation between cameraman, set-dresser and art director both before and during shooting is doubly necessary. Color adds so much to a scene that physical simplification is vital. Elimination of surplus detail actually builds to a stronger and more pictorial scene.

Practically all of these details, it will be seen, have a parallel in black-and-white camerawork. Every black-and-white cameraman is accustomed to watching them almost subconsciously in his daily work. The only difference is that in color they must be watched more closely and (at least at first) more consciously.

Once these details and the somewhat narrower latitude of any color process are understood, any able black-and-white cameraman can photograph color as easily and as confidently as he does black-and-white. This is proven by the increasing number of major studio Technicolor productions being photographed by the studios' own black-and-white cinematographers with but a bare minimum of coaching—advice, rather than help—from Technicolor cameramen. This trend is bound to continue; and as it does—as more and more outstanding black-and-white cameramen familiarize themselves with color camerawork—it will be realized that Technicolor photography is not a mysterious secret but a simple matter of applying the same basic rules that we've learned to observe in monochrome, to the end that we may get better pictures in color.

Ray Rennehan, Local 659, I.A.T.S.E.

Patents

The following patents of interest to readers of International Photographer were issued within the past month from the U. S. Patent Office. The selections are by Robert W. Fulwider, local patent and trade-mark attorney, and Donald K. Allison, contributing editor of International Photographer. This department will henceforth be a regular monthly feature of International Photographer.

No. 2,090,001 — TRANSVERSALLY CONTROLLED ELECTRON TUBE.
Fritz Hamacher, Berlin, Germany, assignor to Allgemeine Elektrizitätsgesellschaft, Friedrich Karl Ufer, Berlin, Germany, a corporation of Germany.

1. An electron discharge tube comprising an electron emitting an electrode, a cylindrical member concentrically arranged about the cathode and being provided with an annular slot, said member permitting the flow of electrons through its slot in substantially all radial directions from a comparatively narrow annular portion of the cathode, a plurality of electron collecting electrodes concentrically arranged about and axially disposed along said member and said emitting electrode, and a control electrode disposed on either side of said slot.



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No. 2,090,017—STEREOCAMERA. D'Arcy A. Young, Jr., Rochester, N. Y., assignor to Eastman Kodak Company, Rochester, N. Y., a corporation of New Jersey.

1. In a photographic camera for taking stereoscopic pictures, the combination with an exposure frame provided with exposure apertures which are spaced an interocular distance, a film moving means including a take-up film roll for drawing a film strip over said exposure apertures, and a locking means including a clutch member connected to rotate with said film roll and including a blocking member normally engaging said clutch member to prevent take-up movement of said film roll, of a measuring means including film engaging member operated by movement of said film strip and including a control member operated by said film engaging member and having a control surface for engaging said blocking member to hold the same out of engagement with said clutch member during movement of said film strip a distance equal to one exposure frame and alternately during movement of said film strip through a distance which is a multiple of said exposure frame.

No. 2,090,045 — NEGATIVE HOLDER

FOR ENLARGER. Roy S. Hopkins, Rochester, N. Y., assignor, by mesne assignments, to Eastman Kodak Company, Jersey City, New Jersey, a corporation of New Jersey.

1. A negative holder for printing machines comprising a frame adapted to support a negative; a second frame having an opening therein and hingedly attached to the first to swing from a negative holding position against the first frame to a negative loading at an angle thereto; a platen hingedly mounted with respect to the first and second frames, said platen being adapted to lie against and fill the opening in the second frame when the latter is swung to a negative holding position to facilitate loading.

No. 2,090,016 — SENSITIVE PHOTOGRAPHIC ELEMENT. Albert A. Young and Alfred D. Slack, Rochester, N. Y., assignors, by mesne assignments, to Eastman Kodak Company, Jersey City, N. J., a corporation of New Jersey.

1. A photographic element comprising a support, a light sensitive silver halide photographic emulsion layer thereon, and a thin, adherent, abrasion-resistant coating over the sensitive emulsion layer and forming the sur-

face of the photographic element, the abrasion resistant layer comprising a wax which is permeable to and incompletely removable in an alkaline developing bath.

No. 2,090,026 — SOUND REPRODUCING DEVICE. Joseph B. Brennan, Fort Wayne, Indiana.

1. In an apparatus for sound reproduction, a diaphragm flexibly supported at its base, a coil supporting portion connected therewith, an actuating coil mounted on the coil supporting portion, and provided with corrugations of approximately uniform diameter arranged concentric with the axis of the coil for permitting free longitudinal movement of said coil in such manner as to permit a wide range of movement of the coil while at the same time preventing lateral movement thereof.

No. 2,090,060—DOUBLE EXPOSURE PREVENTION CAMERA. Joseph Mihalyi, Rochester, N. Y., assignor to Eastman Kodak Company, Rochester, N. Y., a corporation of New Jersey.

1. In a roll film camera, the combination with a camera body, of a spool chamber therein, a winding key adapted to move between two limits of movement; cooperating elements of the movable winding arm and camera body for preventing movement of the arm in one direction until movement in the other direction is completed.

No. 2,090,063 — FOCUSING AUTOMATICALLY ERECTING FRONT CAMERA. August Nagel, Stuttgart, Germany, assignor, by mesne assignments to Eastman Kodak Company, Jersey City, N. J., a corporation of New Jersey.

1. In a camera of the folding type including a camera body having outside walls, a hinged bed and a camera front movable thereover for focusing; the combination with an exposure frame of a camera body considerably wider than the exposure frame, and having a wall curved in cross section form-



NEW POST. Successor as general secretary-treasurer of the IATSE & MPMO is Louis Krouse (left). Mr. Krouse was appointed last month at the executive board meeting in Seattle to fill the unexpired term of Fred J. Dempsey (above) whose sudden death early in August took from the IATSE administration one of its veteran officials.

ing a recess inside of the outside walls of the camera and located to one side of the exposure frame; range finder elements mounted in said recess, having sight openings extending there-through said curved wall.

No. 2,090,168 — PHOTOGRAPH DRYING MACHINE. Harold K. Williams, Port Byron, Illinois.

2. In a photograph drying machine, a cabinet provided with a compartment for the support of print drying units in a vertical position, and a fan chamber below the same, a framework between said chamber and compartment, permitting free passage of air there-through; a screen on said framework; a series of rods on said screen for the support of print drying units in position for expansion; means of exerting pressure on said units when loaded, and a fan in said fan chamber adapted to produce a current of air in said compartment in the direction of the fan.

No. 2,090,387 — PHOTOELECTRIC TUBE. Paul Gorlich, Dresden, Germany, assignor to Zeiss Ikon Aktiengesellschaft, Dresden, Germany.

A photoelectric tube, including within a cylindrical vessel, an anode consisting of a screen on the center of said vessel; a primary cathode on one side of said anode and attached to the inner cylindrical wall of said vessel, and an arcuate secondary cathode mounted diametrically opposite said primary cathode and radially spaced from said anode, said secondary cathode having a window to admit light to said primary cathode.

No. 2,090,389 — PHOTOPRINTING AND DEVELOPING APPARATUS. Vilmos Kunstadter, Budapest, Hungary.

1. A combined photographic contact-printing and developing apparatus comprising a device for photographic contact-printing and a device for development as well as means for guiding of the photo sensitive paper in a single working operation through both devices, the guiding means consisting of an endless belt having strips at distances attached to said belt for clamping the edge of the photo sensitive paper during contact printing and development.

No. 2,090,390 — PHOTOGRAPHIC CAMERA. Heinz Knuppenbender,

Dresden, Germany, assignor to Zeiss Ikon Aktiengesellschaft, Dresden, Germany.

1. In a photographic camera, the combination of a curtain shutter, a photoelectric exposure meter provided with an electrical resistance and a slidable contact member thereof, a shutter speed adjusting member, a shutter slot adjusting member, means for releasably coupling said two members for simultaneous rotative movement at different angular positions with respect to one another, one of said members supporting said electrical resistance and the other of said members having said contact member attached thereto.

No. 2,090,441 — DEVICE FOR ILLUMINATING LENTICULAR FILM. John Eggert, Leipzig-Gohlis, and Gerd Heymer, Wolfen Kreis Bitterfeld, Germany, assignors to I. G. Farbenindustrie, Aktiengesellschaft, Frankfurt on the Main, Germany.

1. A device for illuminating lenticular film which comprises in combination a film gate provided with an aperture; a lenticular film having a record of a multi-color filter in said gate; source of light arranged on the side of the lenticular elements of said film at a distance from the film corresponding to that of the optically effective aperture of the multi-color filter during exposure; an optical means for decomposing the light of said source of light into a spectrum arranged near said film gate having a dispersion to provide a spectrum that the film lenticulations will image in register with the multi-color filter record of the film; and a filter which absorbs yellow and blue-green between the fundamental colors and transmits the red, green and blue of the spectrum inserted in the path of the light rays between said means for decomposing the light rays into a spectrum.

No. 2,090,607 — SELECTIVE DESENSITIZER. Walter Dewey Baldsiefen, Raritan Township, Middlesex County, N. J.

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NEGATIVE - POSITIVE COLOR

The following exposition of the negative-positive method of making of duplicates of the much-discussed triple emulsion natural color films is by Donald Hooper, member of Local 683, IATSE, and the accompanying Figures adapted from drawings by Hooper, were composed photographically by Paul Allen. International Photographer welcomes further discussion on the possibilities

and future of these sensational films.—Ed.

Multiple emulsion color films, aiming at reproducing natural color on the screen, have captured the interest of everyone from amateurs with their snapshots to the executives in charge of major production programs. The future of these films, currently exemplified by Eastman's Kodachrome and

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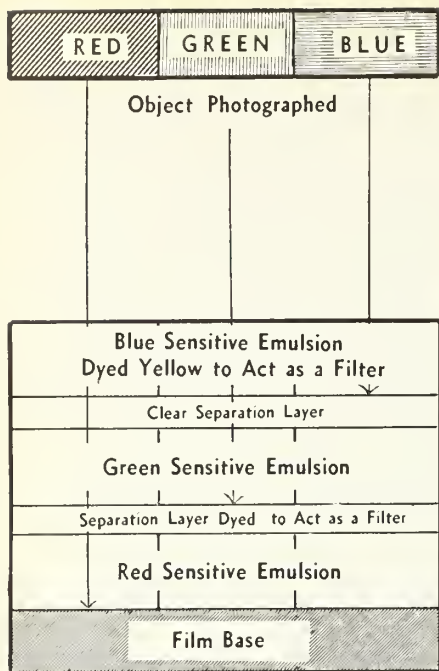


Fig. 1

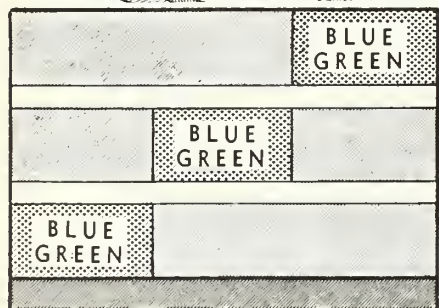
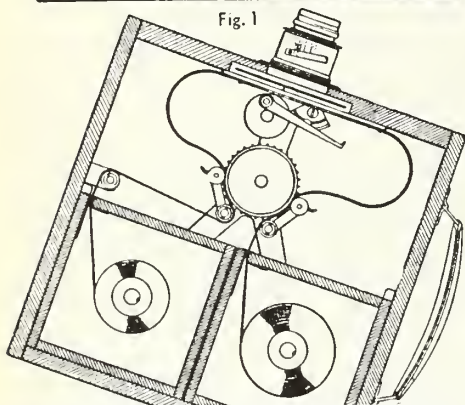


Fig. 2

Agfa-Ansco's Agfacolor, is bound up with the possibilities of obtaining commercially practical duplicates from the beautiful natural color now obtained on these films at their best.

As is generally known these multiple emulsion films are a coating of five gelatin layers upon a single support. There are three emulsion layers and two intervening or separating layers. With expert exposure and skillful handling of the intricate processing methods required, superb color effects are achieved with these films.

The big question to thousands of interested observers is, however: "When will it be possible to obtain satisfactory duplicates, something which now is highly experimental and uncertain?"

Because approximately 90 per cent of all Kodachrome today is used by amateurs, who, whether with the 35 mm. stills, or the sub-standard cine-film, generally require only the initial color print, the question of duplicates at present continues in the laboratory experimental stages. However, there is undoubtedly great concentration on the various avenues of adapting Koda-

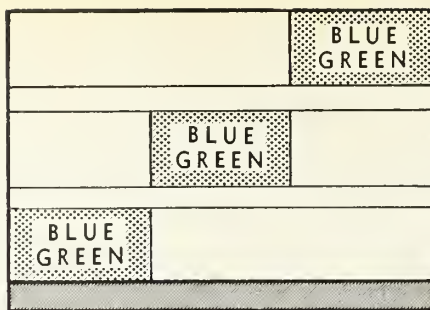


Fig. 3

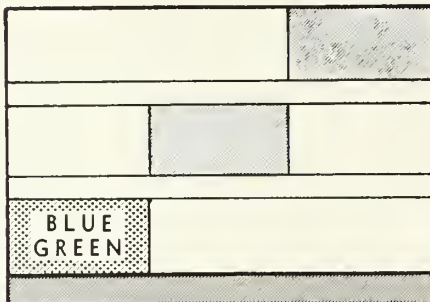


Fig. 4

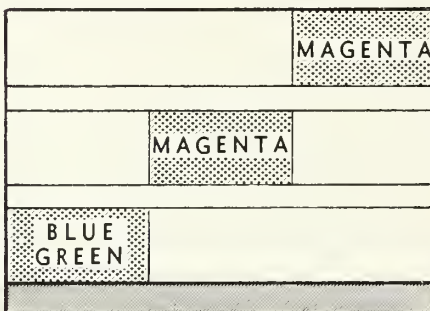


Fig. 5

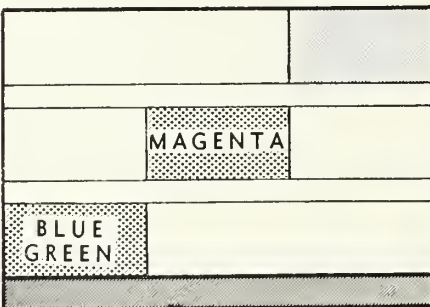


Fig. 6

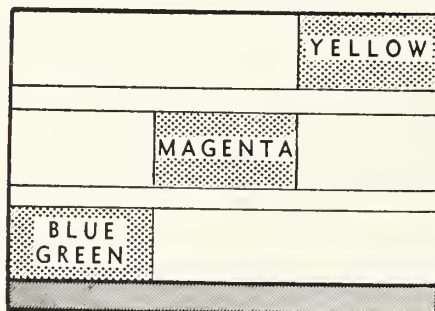
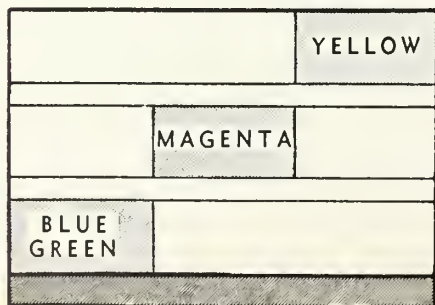


Fig. 7



chrome and Agfacolor to professional motion picture requirements.

Naturally the triple emulsion films will never be considered out of the test tube until film studio production executives can be assured of their perfection to the stage of availability in quantity and with a quality that they can be handled under normal studio production routine.

Meanwhile, the smaller industrial and highly advanced amateur picture makers, using sub-standard film, in which lengths of film for motion pictures now are available in Eastman's Kodachrome, are keenly interested in immediate possibilities of obtaining color duplicates, even though the methods or technique may not be immediately practical on a large scale.

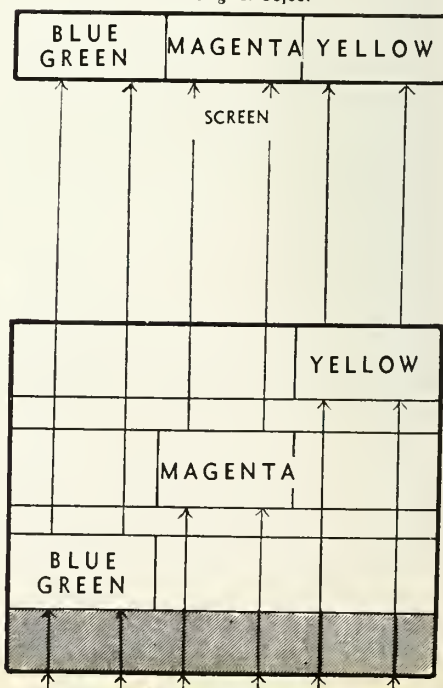
In Los Angeles, Dick Stith of the Stith-Noble Corporation, working in association with Art Reeves and the latter's specialized equipment, have been making duplicates of the Eastman reversal Kodachrome to satisfy the wishes of the sub-standard trade. This writer has heard of no others having the success of this pair although news of such activity certainly would be welcomed by International Photographer.

My own personal experience in the sub-standard field as director and photographer for George Sherlock, Los Angeles independent producer of educational, industrial and surgical sub-standard color motion pictures was a great incentive for working towards a negative-positive method of supplying release prints in quantity. Such a system already is under consideration in current experimental work by the big film manufacturers, although other methods likewise are being given a thorough testing.

The following figures and explanation sketch the highlights in a negative-positive method, which, of course, would depend on rigid control of the laboratory materials and technique involved.

FIGURE 1. Negative Film—specially sensitized for a specific type of lighting such as Mazda or H. I. Arcs with straw filters and coated with emulsions of a low contrast range especially suited to contact or optical printing. Reflected lights from colored objects

Negative Image in Complementary Colors of Original Object



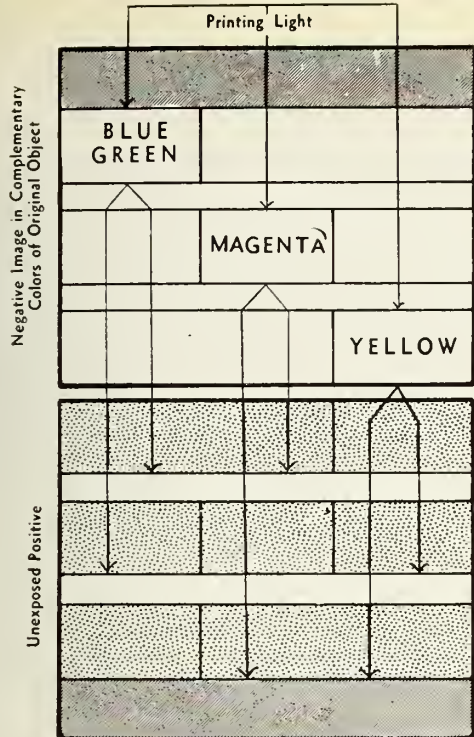


Fig. 10

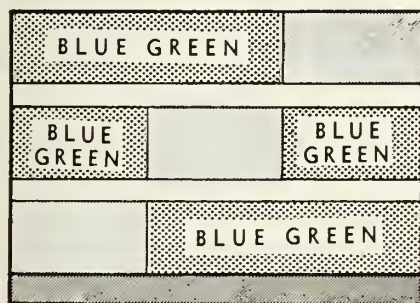


Fig. 11

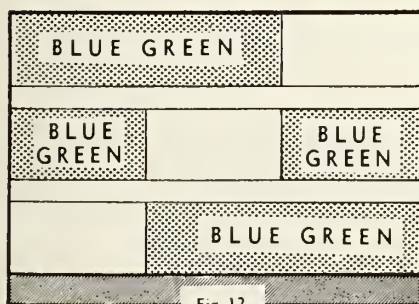


Fig. 12

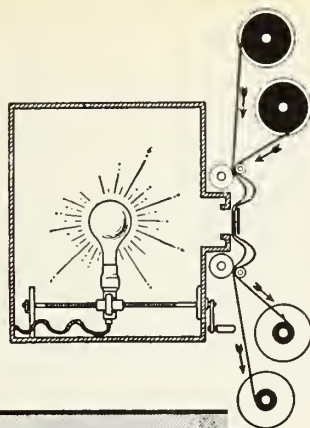


Fig. 13

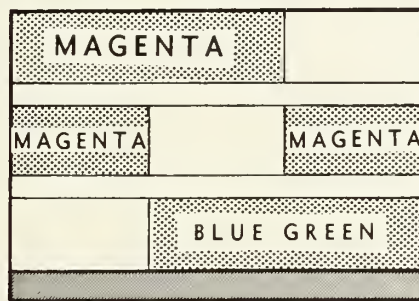
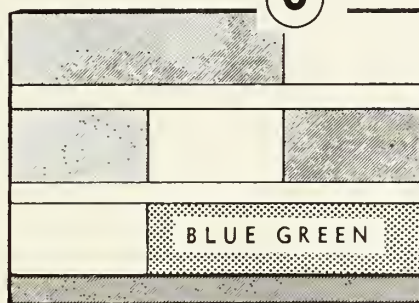


Fig. 14

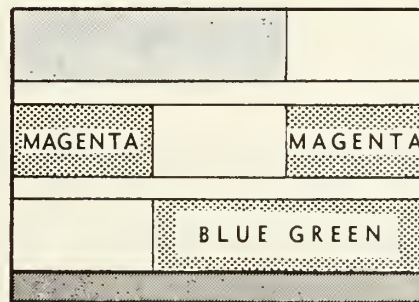


Fig. 15

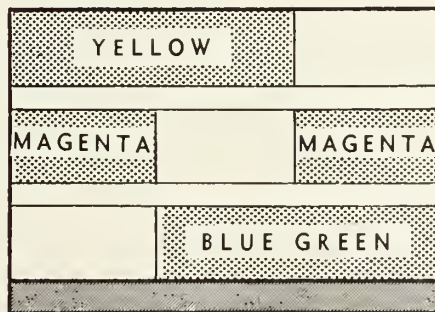


Fig. 16

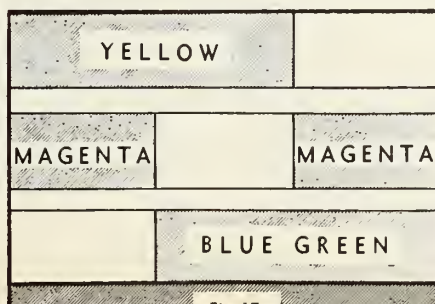


Fig. 17

layer of emulsion, being stopped in the first separation layer. Here the dye is again bleached out and the metallic silver changed to silver halide.

FIGURE 7. The film is again developed in a dye coupling developer, which this time changes the silver halide to metallic silver and deposits a yellow dye.

FIGURE 8. The metallic silver in all three images is next changed to silver halide by a special bleach which will not affect the dyes.

FIGURE 9. The silver halide now is removed by fixation. This fixing bath is so composed that it will not affect the dyes. The film can then be viewed by transmitted light in a projector, the result being a negative image in complementary colors.

FIGURE 10. Here the negative film is in a printer in contact with unexposed positive film, which is specially sensitized for the standard light used in printers. The diagram clearly illustrates how the different colors of light from the negative are recorded in their proper places in the positive film. This positive film must have a contrast range specially suited for projection on the screen.

FIGURE 11. The processing here is the same as in Figure 2, although with a different result, due to the separation of the light at the time of printing as shown in Figure 10.

FIGURE 12. The processing here is the same as in Figure 3.

FIGURE 13. The processing here is the same as in Figure 4.

FIGURE 14. The processing here is the same as in Figure 5.

FIGURE 15. The processing here is the same as in Figure 6.

FIGURE 16. The processing here is the same as in Figure 7.

FIGURE 17. The processing here is the same as in Figure 8.

FIGURE 18. Finally all the silver halide is removed by fixation. As in Figure 9, this fixing bath is also so composed that it will not affect the dye. When this positive film is placed in a projector, the result on the screen will be a positive image in the true colors of the original object

Don Hooper, Local 683, IATSE.

SCREEN
Image in Colors of Original Object

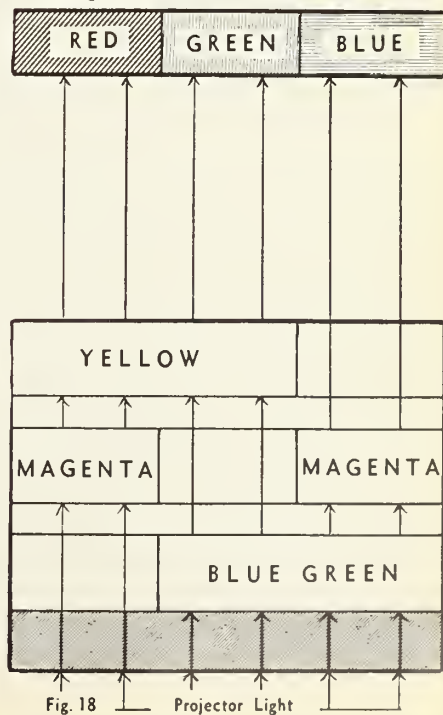


Fig. 18

are shown in diagram, penetrating to proper sensitive layer.

FIGURE 2. The three images after first development—metallic silver and blue-green dye are in exposed areas, silver bromide remaining in unexposed areas.

FIGURE 3. The residual silver bromide now is fixed out with a bath which does not affect the dye.

FIGURE 4. The film is next acted upon by a special bleach which destroys the dye and at the same time transforms the metallic silver back into silver halide. This bleach is so controlled that it attacks only top two layers of emulsion and does not penetrate through to bottom layer.

FIGURE 5. Film is then washed, exposed and passed into another dye coupling developer which transforms silver halide in top two layers into metallic silver and magenta dye image.

FIGURE 6. After being washed and dried, film is again treated as in Figure 4, by a bleach, so composed and controlled as to function only in the top

Projection

Traveller Effects

Los Angeles has long been one of the leading cities in the production of novel end-traveller stunts by its projectionists. These trick stunts with colored slides, special glass, and novel effects developed for use with the Bernograph F7 model with color wheel are popular in a number of cities, but it is doubtful if many projectionists have achieved their effects with as much economy as the Los Angeles group.

Many costing as little as four cents have been developed and in the Fox-West Coast, Warners and other circuits an informal exchange system has been going on for some years.

Ingenuity, a razor blade, ordinary paper and cardboard and common glass are all that is needed for many of the effects slides and these in combination with cheap cut-glass dishes have been used with good effect in livening the change-overs from feature to news-reel or shorts with colorful and artistic projections on the stage curtains.

Ed Olson, chief projectionist at Warner Brothers Hollywood Theatre, is the creator of the effect slides illustrated with this article. Shown are three combination slide designs, A, B and C, and four effective one-piece slides in C and D; which were made from the simplest materials.

The latter pieces are (top) ordinary plate glass, etched into a wave effect;

(middle) the familiar wire-strengthened door glass, etched with a scroll pattern; (bottom) Florentine door glass with a modernistic design. Lower C is a piece of irregularly molded glass, used greatly in modern building design, which when used just as it was manufactured with the color wheel produces a rolling modernistic effect.

Glass intended for the effect slides can be cut to 5-inch by 4-inch size at many establishments to be found in any telephone directory for such a nominal cost that it is cheaper to have it trimmed properly than to attempt home-craftsmanship.

The slide effects in Figure A consist of two pieces of ordinary thin white cardboard, from which an irregular wave design has been cut out with a razor blade. Each piece is mounted separately within ordinary window glass plates, which are fastened with photographer's tape. In operation the slides are thrown separately and adjusted to focus over most of the proscenium area into the pattern shown in top A. When used in conjunction with the color wheel, rolling waves of successive colors seem to move upward or downward, according to the placement of the slides. Additional color tones seem to appear due to the three shades obtained by the juxtaposition of the two patterns.

Figure B, a more complicated pattern, was cut from ordinary letter paper. The design at bottom was first drawn in pencil, then cut out carefully with a razor blade. Care was taken that the cutout pieces were not torn or crumpled. After mounting the original sheet between glass plates, the cutout pieces were then pasted to one plate of the second pair, placed over the original as a guide, thus securing a perfect intaglio. Designs of this type will produce varied effects merely by

slight changes in projection adjustment; and many operators report that a little experimenting will reveal unsuspected possibilities.

The two slides shown in the two top sections of Figure C are simpler versions of Figure B effect. These bolder designs are easily adapted to a number of varied combinations.

Olson and other Los Angeles projectionists obtain startlingly colorful effects by using slides of this design with ordinary glass dishes. The dishes are mounted ahead of the slides and when rotated in various combinations with the color wheel are so effective as to elicit favorable audience comment to the theatre staffs.

International Photographer plans to make line cuts of a number of the outstanding design effects now used in the Los Angeles area by members of Local 150 and these will be available without cost to IATSE projectionists who request them. Future issue also will contain complete descriptions of more complicated but inexpensive end-traveller novelties and stunts.

Cramer's Illness

Third installment in International Photographer's series of articles on projection equipment and progress, is unfortunately set back for several issues, due to the serious illness of its author, Paul Cramer, member of Local 150, IATSE, who was stricken last month with a serious attack of pneumonia, from which he now is convalescing safely. Mr. Cramer's illness also caused a hiatus in considerable correspondence with projectionists throughout the country. He expects to take up where he left off within a month or so.



These end-traveller effect slides, designed by Chief Projectionist Ed Olsen Local 150, IATSE) of Warner Brothers'

Hollywood Theatre, cost from four to 20 cents. They are fully described in story on this page.

Standard Nomenclature

The Academy Research Council last month announced adoption of standard nomenclature for electrical filters used in studio sound recording circuits and theatre reproducing circuits throughout the industry. Previously these have been described by several methods, none of which conveyed as much information as is necessary to completely and properly note filter characteristics, the announcement pointed out.

The new style was adopted after recommendations from the ARC committee on standardization of sound projection equipment and henceforth all methods previously used will be discarded.

Previous to its adoption the Filter Nomenclature was approved for use in the theatre field by Electrical Research Products, Inc., RCA Manufacturing Company and technical representatives of many of the theatre companies cooperating in the industry standardization program, and for use in sound recording circuits by sound directors of all major studios.

Copies of specifications for the standard also have been submitted to the Institute of Radio Engineers and to the Radio Manufacturers Association for possible use in the radio industry, to which it may be equally applied.

On the committee which conducted the investigation resulting in the adoption of this standard were: John Hilliard, Chairman; John Aalberg, Lawrence Aicholtz, Barton Kreuzer, E. A. McClintock, K. F. Morgan, Elmer Raguse, Gordon Sawyer, William Thayer, Ralph Townsend, S. J. Twining, and Gordon S. Mitchell, Manager of the Research Council.

Full text of the ARC report follows:

"In consideration of the confusion arising from the variety of methods by which wave filters are designated in the field, this Committee, as a second step in its program, has undertaken the standardization of filter nomenclature.

"At the present time there are two general methods for designating filters, neither of which convey such information as is needed to establish the filter characteristics, and it was consequently recognized by the Committee that in addition to adopting a standard, any method worked out should convey definite information concerning the limits of the transmission bands.

"Both methods now in use for designating filters employ the frequency which separates the transmission range from the suppression range. For band filters two such separation frequencies are necessary, while for low-pass and high-pass filters only one is needed. Inasmuch as the insertion loss of a filter changes gradually in the cross-over region, the specification of a separation frequency is a matter of definition. The two methods now used differ from each other in their manner of defining these frequencies—one method defining the separation point as the frequency at which 10 db insertion loss is obtained, whereas

"Neither of these methods convey sufficient information regarding the insertion loss characteristics of filters within their transmission band—the 10 db loss method does not give information as to the manner in which the insertion loss characteristic approaches this point, and the theoretical cut off frequency method gives no loss information whatsoever, although anyone familiar with the design of filters can visualize roughly the manner in which the change takes place.

"SPECIFICATION: The standard symbol describing any filter shall consist of three characters, the first designating the frequency of 3 db insertion loss, the second the character 'Hi' or 'Lo' to indicate high pass or low pass, and the third the frequency of 10 db insertion loss (all frequencies in cycles)."

Thus the following describes several low pass filters "4000 Lo 6000" (Figure 1), "5000 Lo 7000" or "4500 Lo 5500" and the following describes several high pass filters: "60 Hi 40" (Figure 2), "80 Hi 30" or "100 Hi 50."

It might be pointed out that a combination of two of the above symbols may be used to describe a band-pass filter (Figure 3) or a dividing network (Figure 4) or a reverse combination of symbols may be used to describe a band-elimination filter (Figure 5).

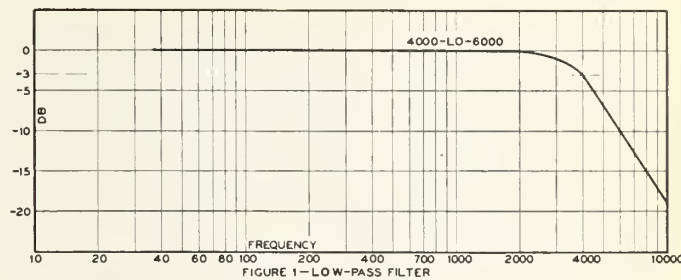


FIGURE 1—LOW-PASS FILTER

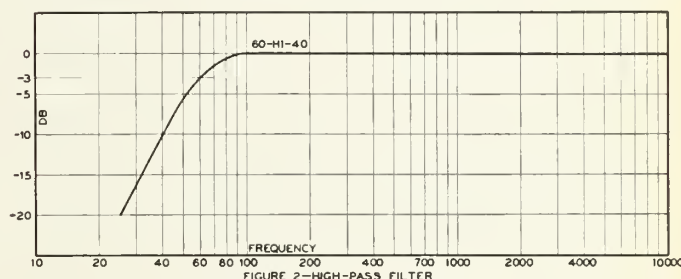


FIGURE 2—HIGH-PASS FILTER

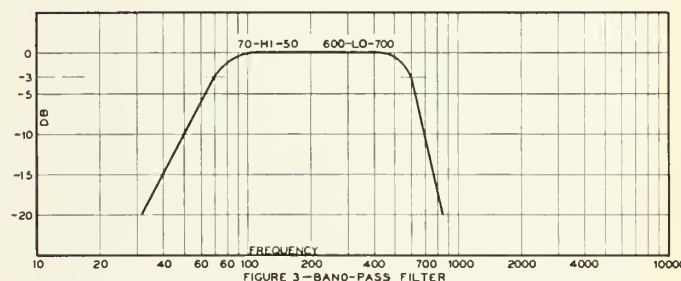


FIGURE 3—BAND-PASS FILTER

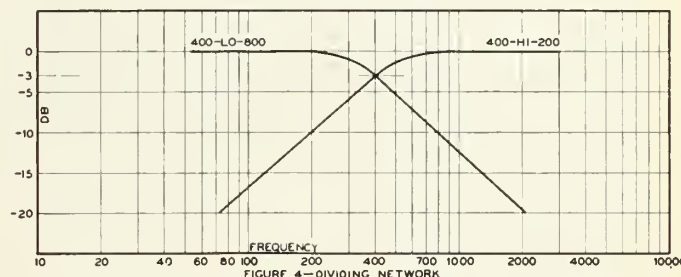


FIGURE 4—DIVIDING NETWORK

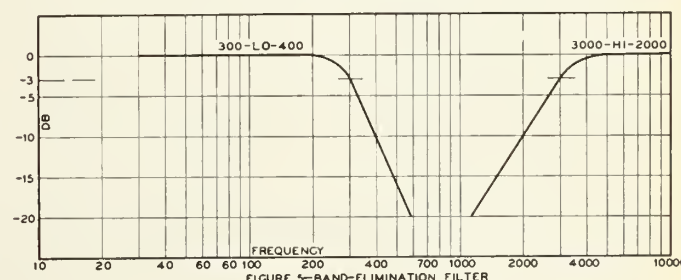


FIGURE 5—BAND-ELIMINATION FILTER

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Marlene Dietrich and Charles Boyer co-star in this David O. Selznick production, under the direction of Richard Boleslawski. Howard Greene, Photographer; Hal Rosson, Photographic adviser; W. A. Oettel, Studio Chief Electrician.



Exceptional penetration and carrying power are required of a light source to pierce the obscuring clouds of a sand storm on the desert, but the carbon arc proved equal to the task.

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Hollywood Reporter.

"... If color has never been a box office asset before, this picture ('Vogues of 1938') will make it one."

Hollywood Reporter.

"... Technicolor advances by a great stride toward the day when all important pictures will be prismatic."

Daily Variety.

"Showmanship with a capital \$... Technicolor has never been used more effectively."

Variety.

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Motion Picture Herald.

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Motion Picture Corporation

HERBERT T. KALMUS, President

October-1937

25

International PHOTOGRAPHER

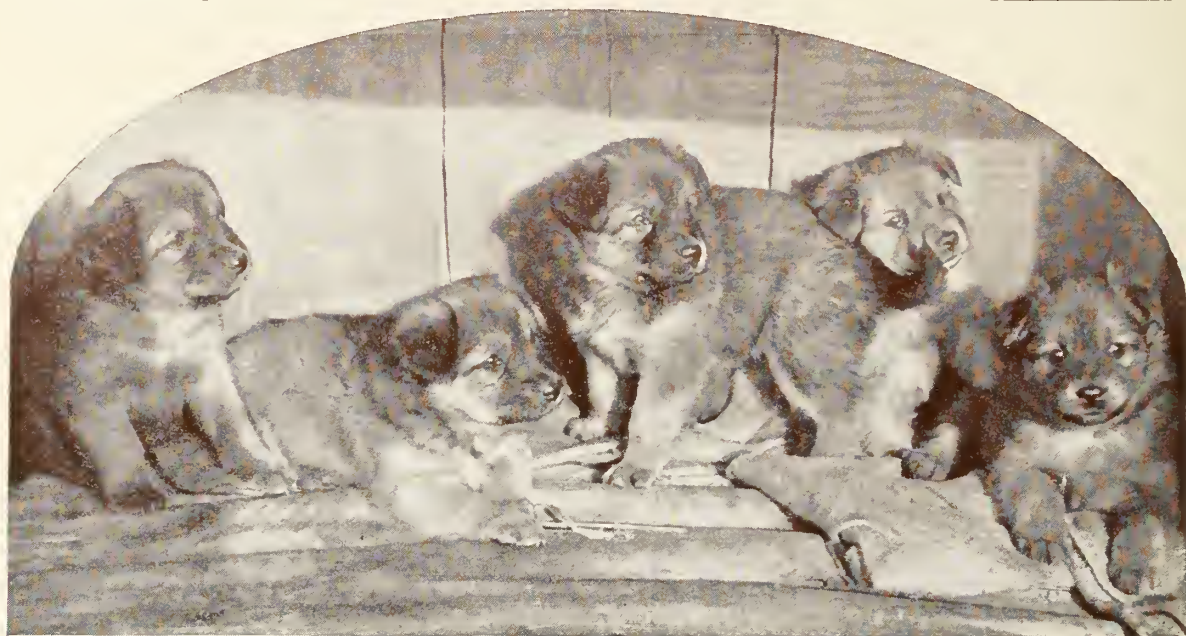
Vol. 9

A JOURNAL OF MOTION PICTURE ARTS AND CRAFTS
Hollywood, California



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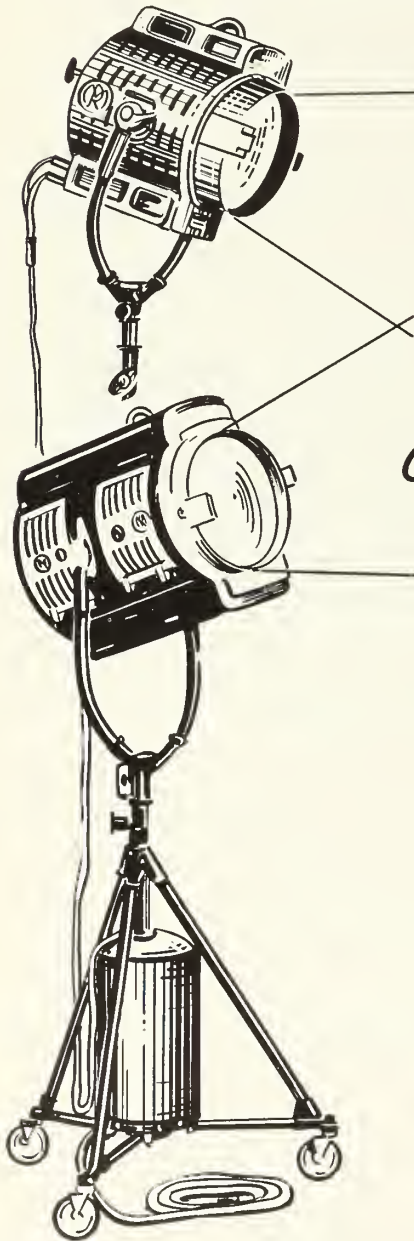
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International PHOTOGRAPHER

A JOURNAL OF MOTION PICTURE ARTS and CRAFTS

Vol. 9

Hollywood, October 1937

No. 9

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The International Photographer, as the official publication of the International Photographers, Local 659, a part of the International Alliance of Theatrical Stage Employees and Motion Picture Machine Operators of the United States and Canada, not only represents the entire personnel of photographers now engaged in professional production of motion pictures in the United States and Canada, but also serves other technicians in the studios and theatres, who also are members of the International Alliance, as well as executives and creative artists of the industry.

Contents

ON THE COVER. A striking shot by Jack Woods from 20th Century-Fox's "In Old Chicago." More pictures in Lighting-Sets section.

TRADEWINDS	5-6-7
New Photographer Service	Kruse Screen Tests
SMPE Program	
CAMERA	8 to 23
Introducing Hurrell	Light Meters and Color
New Agfa Building	Infra-Red and Superpan
Pete Smith Goes Candid	The New \$25 Argus
New Eastman Case	
BIG PICTURES	20-21
"Stage Door"	
LABORATORY	24-25
More Allison	Voltage Control
PROCESS	25-26-27-28
Montage Marches In	New Teague Still Process
NEW DEPARTMENTS	29
Welcoming New IA Members	
\$100,000 "Robin Hood" Props	
LIGHTING—SETS	32-33
Bardwell & McAlister Expand	"In Old Chicago"
Polarized Eye Glasses	
SOUND	34-35-36-37
New Control Technique	Albin Level Indicator
Playback Progress	
PROJECTION	38-39
Aperture Standard Change	Technicolor's Ambassador
New Models Due	
CLASSIFIED DIRECTORY	39-40

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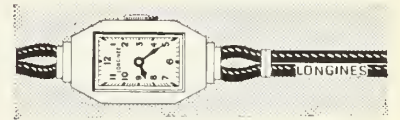
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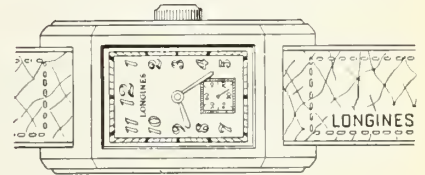


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THE Bell & Howell Eyemo Camera has been engineered to master the unexpected . . . whether outside the studio or pinch-hitting on an interior set. The adaptability of the Eyemo has made it the "right arm" of field cameramen for many years. Now, new features and improvements make it even more versatile and dependable.

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Every model has a handcrank in addition to a powerful spring motor. You never will miss

anything because of stopping to wind the motor.

The Eyemo is as light and compact as a superlatively fine camera can be built . . . so small that a tripod is not essential.

Electric motors can be added at any time, or one motor used on several Eyemos, because Bell & Howell precision manufacture makes every camera a duplicate of others in motor mounting. Universal, 12-volt, or synchronous motors are available.

Sound can be added to Eyemo films. S.M.P.E. standard sound aperture and matched viewfinder are available in every model, and the improved, vibrationless governor assures absolutely accurate speeds . . . from the first to the last foot of film.

Many more Eyemo features are fully described in literature which will be mailed on request.

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BELL & HOWELL

International PHOTOGRAPHER

A JOURNAL OF MOTION PICTURE ARTS AND CRAFTS

Vol. 9

No. 9

Tradewinds

A New Photographer Service

Technical Jury program gets under way as news and record service to manufacturers, technicians and executives on all new products for use in entertainment field.

Plans are nearing completion and blanks will go into the mail this month to all manufacturers of equipment, materials, instruments, and devices used in the production of motion pictures or in photography for the International Photographer's new Technical Jury program. The program will have two phases.

First, the new blanks will have space for all essential information on any new product—name of manufacturer, distributor, specifications, price, and the sponsors statement as to what the product is claimed to be or do. When a new product is ready to go on the market, the manufacturer or distributor may fill in the blank and mail it to International Photographer by the 20th of each month. This information will be published in a regular section each month and is intended to serve as the backbone of International Photographer's function as a medium for the exchange of news and ideas between manufacturers, technicians and executives.

Second, any manufacturer so desiring, may forward to International Photographer a sample of his product for inspection by the Technical Jury, which will be composed of members of the IATSE in all important branches of motion picture production, as well as a group of technical experts and research scientists, who are regular contributors to these pages. The product submitted will be used under actual commercial production conditions and a factual news report of this use will be published in International Photographer. Products

meeting the approval of the technical jury will be granted the use of an International Photographer IATSE Seal of Merit.

Every person in the industry has the assurance that this program will be conducted with the highest standards of ethical and technical honesty, with no fear, favor or discrimination. Its sole aim is to establish a complete news and reference service on the equipment used daily by members of the IATSE in studios and theaters.

SMPE Fall Meet

Tentative lineup of papers shows equal division between news of improvements and new products.

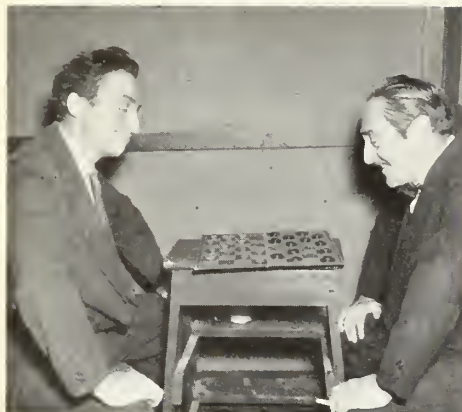
An equal division of progress in motion picture engineering between further refinements of present equipment and techniques and the development of new equipment and advances toward improved entertainment values is evidenced in the tentative lineup of papers to be presented at the fall convention of the Society of Motion Picture Engineers. The four-day session, from Monday to Thursday, October 11-14, will be held at the Pennsylvania Hotel in New York.

Many of the papers already announced deal with improvements in sound equipment, film, lighting and projection. A large list of papers on new products also is scheduled. Outstanding among the latter is a description and demonstration of "Stereophonic" recording and reproduction (International Photographer, July, 1937) by J. P. Maxfield of ERPI, and a demonstration of three dimensional pictures by G. W. Wheelwright, III, of the Land-Wheelwright Laboratories.

The tentative program for the fall



"DEAR HERB": read note from Eddie Collins, at right, accompanying this picture: "Still in Africa, having a lot of fun mixed with work. Sid (Wagner), at left, and I are having lunch out in the blue. Wish that you were along—it was a good lunch. Looks like another month here. Give our regards to everybody." The card was sent to Herbert Aller, secretary of Local 659, IATSE, from Kenya, Uganda, Kanganyika, Africa, where the 20th-Fox company is on location for "Stanley and Livingstone."



SPME gathering follows:

Monday, October 11th

9:00 A.M.—REGISTRATION.

10:00 A.M. TO 12:00 P.M.—BUSINESS AND GENERAL SESSION.

Opening Remarks by President S. K. Wolf (10 Min.).

Report of the Convention Committee; W. C. Kunzmann, *Convention Vice-President* (5 Min.).

Report of the Membership Committee; E. R. Geib, *Chairman* (5 Min.).

Society Business; Election of Officers and Other Business (20 Min.).

"Hunting with a Microphone the Songs of Vanishing Birds"; P. Kellogg, Laboratory of Ornithology, Cornell University, Ithaca, N. Y. (Demonstration) (30 Min.).

"Safeguarding and Developing Our Film Markets Abroad"; N. D. Golden, Motion Picture Section, U. S. Department of Commerce, Washington, D. C. (20 Min.).

"High-Speed Motion Picture Photography Applied to the Design of Telephone Apparatus"; W. Herriott, Bell Telephone Laboratories, Inc., New York, N. Y.

(Demonstration) (20 Min.).

12:30 P.M.—INFORMAL LUNCHEON.

For members, their families, and guests. Brief addresses by prominent members of the industry.

2:00 P.M. TO 5:00 P.M.—PHOTOGRAPHIC AND LABORATORY SESSION.

"Producing an Industrial Film"; J. A. Norling, Loucks & Norling Studios, New York, N. Y. (Demonstration) (25 Min.).

"Further Progress in Film Storage"; Capt. J. G. Bradley, National Archives, Washington, D. C. (20 Min.).

"The Effect of the Composition of an MQ Developer on Its Reduction Potential"; R. M. Evans and W. T. Hanson, Jr., Kodak Research Laboratories, Rochester, N. Y. (20 Min.).

"A Modern Motion Picture Laboratory"; C. L. Lootens, Republic Productions, Inc., North Hollywood, Calif. (20 Min.).

"Demonstration of Polaroid Three-Dimensional Motion Pictures"; G. W. Wheelwright, III, Land-Wheelwright Laboratories, Boston, Mass. (1 Hour.).

8:00 P.M. TO 10:30 P.M.—BELL TELEPHONE LABORATORIES; SPECIAL SOUND SESSION.

VICTORY AND DEFEAT enacted by two of the screens' ace players, Mischa Auer and Adolphe Menjou for the camera of Romann Freulich, member of Local 659, IATSE, and a veteran stillman on the Universal lot.

"Distortion in the Reproduction of Hill-and-Dale Records"; M. J. Di Toro, Thomas A. Edison, Inc., Orange, N. J. (20 Min.).

"Recent Developments in Hill-and-Dale Recorders"; L. Vieth and C. F. Wiebusch, Bell Telephone Laboratories, Inc., New York, N. Y. (Demonstration) (20 Min.).

"Nomenclature and Specifications Including Description of the Various Types of Movietone Release"; J. K. Hilliard, Metro-Goldwyn-Mayer Studios, Culver City, Calif. (Demonstration) (25 Min.).

"Film Perforation and 96-Cycle Frequency Modulation in Sound-film Records"; J. Crabtree and W. Herriott, Bell Telephone Laboratories, Inc., New York, N. Y. (15 Min.).

"Push-Pull Recording"; J. G. Frayne and H. C. Silent, Electrical Products, Inc., Hollywood, Calif. (25 Min.).

"Stereophonic Recording and Reproduction from Motion Picture Film Records"; Introductory Remarks by J. P. Maxfield, Electrical Research Products, Inc., New York, N. Y. (Demonstration) (15 Min.).

Tuesday, October 12th

10:00 A.M. TO 12:00 P.M.—ENGINEERING PRACTICE SESSION.

"Air-Conditioning with Lithium Chloride"; G. A. Kelley, Surface Combustion Corp., Toledo, Ohio (20 Min.).

"The Activated Alumina System as Applied to Air-Conditioning and Drying Problems"; G. L. Simpson, Pittsburgh Lector-dryer Corp., Pittsburgh, Pa. (20 Min.).

"Die Castings and Their Application to Photographic Appliances"; C. Pack, Doehler Die Casting Co., New York, N. Y. (20 Min.).

"The Use of Inconel for Photographic Film Processing Equipment"; G. L. Cox, International Nickel Co., Inc., New York, N. Y. (20 Min.).

"Vacuum-Tube Engineering for Motion Pictures"; L. C. Hollands and A. M. Glover, RCA Manufacturing Co., Inc., Harrison, N. J. (25 Min.).

2:00 P.M. TO 5:00 P.M.—LIGHTING AND STUDIO SESSION.

"Spectral Distribution and Color-Temperature of the Radiant Energy from Carbon Arcs Used in the Motion Picture Industry"; F. T. Bowditch and A. C. Downes, National Carbon Co., Inc., Cleveland, Ohio (20 Min.).

"Recent Developments in Background Projection"; G. G. Popovici, Bronx, N. Y. (20 Min.).

"Recent Developments in Gaseous Discharge Lamps"; S. Dushman, Research Laboratory, General Electric Co., Schenectady, N. Y. (20 Min.).

Report of the Studio Lighting Committee, R. E. Farnham, *Chairman* (20 Min.). "Light Control in Photography"; G. Mili.



FIRST PORTABLE AIR-COOLER that can be wheeled about easily despite its massive weight of 16 tons was designed specially by Delco Frigidaire for Warner Brothers. The principle is the same as in domestic ice-making machines, adapted to manufacture cold air instead of ice. It controls huge sets to approximate 74 degrees, even when many lights are in use.



Westinghouse Electric & Manufacturing Co., Bloomfield, N. J. (20 Min.).

"Modulated High-Frequency Recording as a Means of Determining Conditions for Optimum Processing"; J. O. Baker and D. H. Robinson, RCA Manufacturing Co., Inc., Camden, N. J. (20 Min.).

"Recording Tests on Some Recent High-Resolution Experimental Emulsions"; J. O. Baker, RCA Manufacturing Co., Inc., Camden, N. J. (20 Min.).

8:00 P.M. TO 11:30 P.M.—

Showing of Selected Historical Motion Pictures arranged by John E. Abbott, Director of the Film Library, The Museum of Modern Art, New York, N. Y. (1½ Hours.).
Showing of a Recent Feature Picture and Shorts (2 Hours.).

Wednesday, October 13th

10:00 A.M. TO 12:30 P.M.—PROJECTION PRACTICE SESSION, A. N. Goldsmith, Chairman.

"The Practice of Projection"; A. N. Goldsmith, New York, N. Y. (5 Min.).

"Grading Projectionists"; G. P. Barber, Government of the Province of Alberta, Edmonton, Alberta, Canada (20 Min.).

"Cooperation as the Keynote of Successful Small Town Projection"; T. P. Hover, Warner's Ohio Theatre, Lima, Ohio (15 Min.).

"A Discussion of Screen Image Dimensions"; F. H. Richardson, Quigley Publishing Co., Inc., New York, N. Y. (15 Min.).

"New Approaches to the Presentation of the Motion Picture Theatre"; B. Schlanger, New York, N. Y. (15 Min.).

"Precision All-Metal Reflectors for Use with Projection Arcs"; C. E. Shultz, Heyer-Shultz, Inc., New York, N. Y. (10 Min.).

"Perforated Screens and Their Faults"; F. H. Richardson, Quigley Publishing Co., Inc., New York, N. Y. (10 Min.).

"Commercial 16-mm. Projection Faults"; C. L. Greene, Minneapolis, Minn. (15 Min.).

2:00 P.M.—OPEN AFTERNOON.

7:30 P.M.—SEMI-ANNUAL BANQUET.

Short addresses by eminent members of the industry. Entertainment and Dancing.
Presentation of annual SMPE Progress Medal and Journal Awards.

Thursday, October 14th

10:00 A.M. TO 12:00 P.M.—APPARATUS SYMPOSIUM AND MANUFACTURERS' ANNOUNCEMENTS.

"The Sound-Level Meter in the Motion Picture Industry"; H. H. Scott, General Radio Co., Cambridge, Mass. (15 Min.).

"A New Motion Picture Camera Crane"; E. H. Heyer and E. L. Fisher, Universal Pictures Corp., Universal City, Calif. (15 Min.).

"Non-intermittent Projection"; J. F. Leventhal, Leventhal Patents, Inc., New York, N. Y. (15 Min.).

"New Ideas in Mobile Sound Recording Equipment"; C. M. Ralph and J. G. Matthews, General Service Studios, Hollywood, Calif. (15 Min.).

"A Mobile Sound Recording Channel"; L. T. Goldsmith, Warner Brothers Pictures, Inc., Burbank, Calif. (15 Min.).

"A Device for Cleaning the Sound-track of Motion Picture Film During Projection"; R. V. Fisher, Flower City Specialty Co., Rochester, N. Y. (Demonstration) (15 Min.).

"A Recorder for Making Buzz-Tracks"; E. W. Kellogg, RCA Manufacturing Co., Inc., Camden, N. J. (10 Min.).

"Advantages of Spark Illumination in Certain Types of Photography"; M. A. Durand, International Filmbook Corp., South Norwalk, Conn. (20 Min.).



NEWSREELERS IN THE NEWS. Both members of this gag picture with a comedy camera and sound layout were in the news last month. Ray Fernstrom, standing, member of Local 659, IATSE, returns to the air with a transcribed program dealing with the adventures of newsreel photographers. Fernstrom is featured on the program, which is being staged and produced by David S. Ballou and the pair are interested in fact stories of adventures of the news cameramen. One of their first platters deals with the experience of Al Mingalone, Paramount photographer, shown kneeling, who was saved from almost certain death last month when a cluster of captive balloons from which he was shooting broke loose from the ground crew near Old Orchard, Maine. A sharp-shooting Catholic priest, Rev. James J. Mullen, shot the balloons one by one and brought Mingalone safely down.

2:00 P.M. TO 5:00 P.M. SOUND SESSION.

"Reduction of Loop-Length Variations in Non-Slip Printers"; E. W. Kellogg, RCA Manufacturing Co., Inc., Camden, N. J. (20 Min.).

"Transmission Characteristics of Western Electric Re-recording Channels"; C. R. Daily and F. L. Hopper, Electrical Research Products, Inc., Hollywood, Calif. (20 Min.).

"Permanent Magnet 4-Ribbon Valve for Portable Channel Push-Pull Recordings"; E. C. Manderfeld, Electrical Research Products, Inc., Hollywood, Calif. (20 Min.).

"Improvements in Noise-Reduction Circuits"; R. R. Scoville, Electrical Research Products, Inc., Hollywood, Calif. (20 Min.).

"Improved Methods in Detecting Light-Valve Overload"; C. R. Daily, Electrical Research Products, Inc., Hollywood, Calif. (20 Min.).

"Overload Limiter for the Protection of Modulating Devices"; R. R. Scoville, Electrical Research Products, Inc., Hollywood, Calif. (20 Min.).

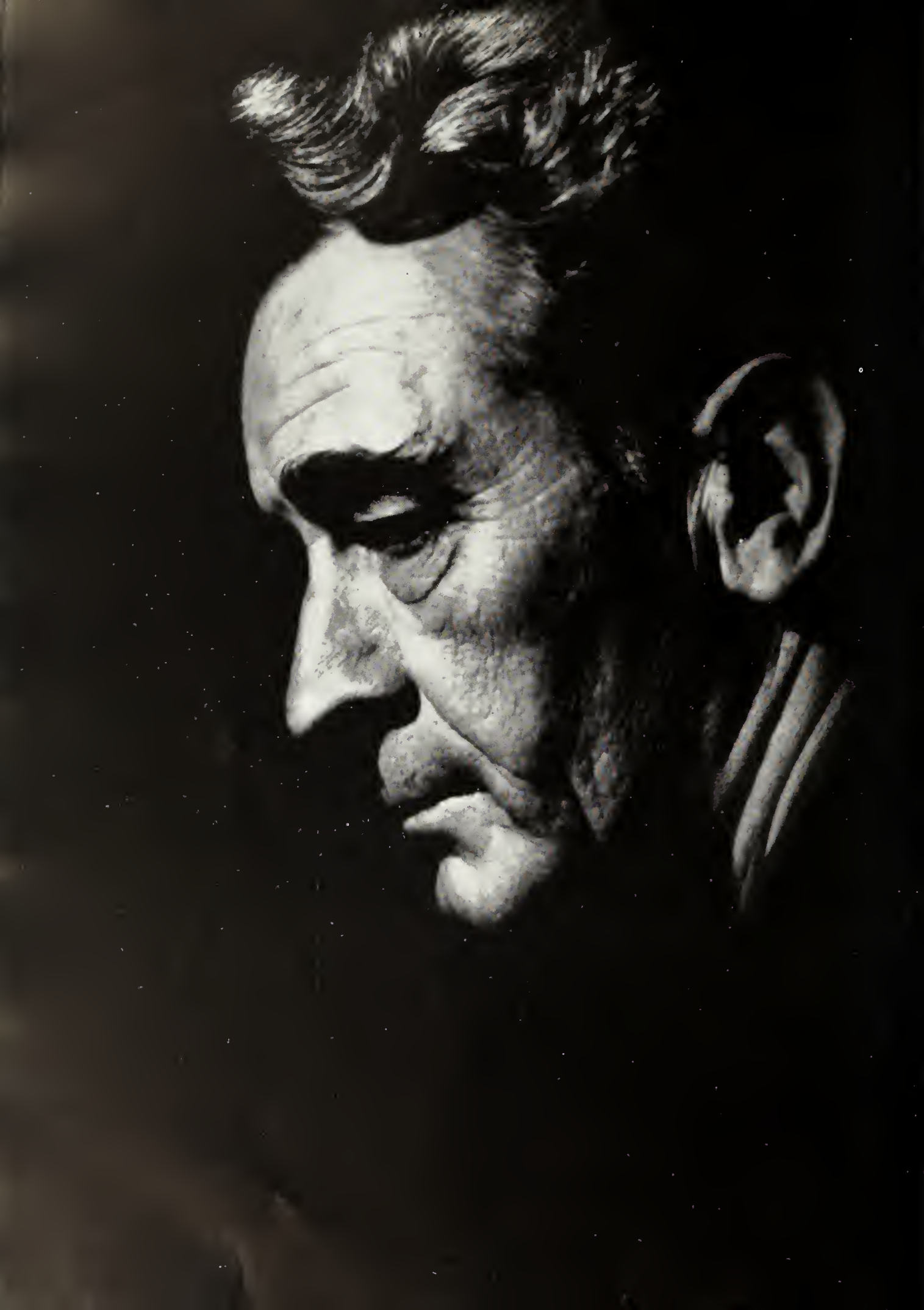
Kruse Screentests

Equipment rental organization adding facilities for professional tests with Fred Newmeyer handling direction.

Henry Kruse is adding a screen test service to the facilities of his camera and equipment rental organization. In announcing the new service last month, Kruse, a member of Local 659, IATSE, emphasized that his organization is offering merely the highest type professional test facilities, appealing to professional players and actors' agents and that there will be no association with individual or group promising work through tests or training.

Fred Newmeyer, veteran film director, will handle the tests, which will be produced at the Hollywood studios, with a 100 percent IATSE crew. The prints will be on 35mm. and will be given the finest laboratory processing.

This is the only service of this type available in Hollywood, outside the major studios' own test departments. Its particular value is for free-lance stars, featured and support players and their agents who wish to convince studio executives of their versatility or of their suitability for particular parts.



Camera

George Hurrell

Introducing International Photographer's contributing editor, ace portrait photographer member of Local 659.

International Photographer takes pleasure in announcing that George Hurrell, ace Hollywood portrait photographer, will in the future be a contributing editor of the magazine. Hurrell, a member of Local 659, IATSE, has received international acclaim for his striking technique and skillful photographic rendering of character and personality. He has photographed the foremost stars and his work has appeared in the outstanding periodicals of the day.

To many photographic bugs, George Hurrell is known as an outstanding "arty" photographer, which happens to be far off the mark. Hurrell's ideas and technical viewpoint are so eminently practical that we believe his future contributions, coming as they will, from

a leader in the field, will have a very sane effect in knocking some of the silly ideas that now are being exploited in photography into a cocked hat. His initial article will appear in the November issue of International Photographer.

New Afga Home

Agfa-Ansco and C. King Charney moving into new Hollywood headquarters; plan closer technical co-operation policy.

Latest addition to Hollywood's "Film Manufacturers' Row" on Santa Monica Boulevard is a new building at Cole Avenue, housing the Hollywood Agfa headquarters. It represents an investment in excess of \$80,000, was erected by Agfa-Ansco Corporation to house both its Hollywood staff and that of C. King Charney, distributors of Agfa products to the motion picture industry.

The new building covers an area approximately 10x100 feet on a lot 80x100 feet in size, and houses offices, research laboratories and a spacious warehouse for the service of Agfa film users. The lower floor is occupied almost exclusively by the Agfa staff. The Charney organization have offices on the top floor.

On the main floor, in addition to general offices and warehouse are found the offices and laboratories of Agfa's technical representatives, Wilson Leahy and Grant Hough. At their disposal are three fully equipped photo-technical laboratories for research and photographic testing of Agfa film products. One of these is a photo-chemical laboratory equipped both for the mixing of ordinary photochemical solutions and for original chemical research. The second is devoted to sensitometry. The third is a completely equipped photographic darkroom. All three are air-conditioned. An unusual feature of these rooms is that instead of being finished in the black or green usually employed for photographic laboratories, they are painted with aluminum paint. This finish, while equally safe even for Superpan emulsions, is said to provide a much more convenient darkroom visibility.

The upper floor has the offices of C. King Charney and his associate, Dr. Herbert Meyer who early in the year resigned from his former post as Agfa's



Opposite page presents a striking study by Hurrell of James Montgomery Flagg and above two forceful character portraits, Paul Muni and Marlene Dietrich.



PICTURES BY SIBALD

Pete Smith, MGM's comic commentator, turns out a short on candid camera craze as these

Technical Representative to become the Vice-President of C. King Charney, Inc. The Charney organization's offices are also on this floor, as is an air-conditioned conference room.

Spokesmen of the Agfa-Charney forces point out that conditions of modern production are such as to demand increasingly close cooperation between the manufacturer of film and the cameramen who use it. Qualities which may appear negligible to a remote research staff may often be highly desirable to practical users, while in any case the desires of the ultimate consumer should, insofar as technically possible, guide the efforts of the manufacturer and his research staff. In proof

This type of cooperative research will be emphasized in the policy of the Agfa-Charney combine, especially with their new and more modern facilities.

The Present Agfa-Anseo Corporation is one of the oldest firms in America's photographic industry. It is a direct successor of the firm of Anthony & Scoville, which back in the '30's took over the patents of the Rev. Hannibal Goodwin, one of the two original inventors of celluloid film. Despite a name indicative of a former transatlantic connection, it now is a completely American firm.

Agfa's representative in Hollywood, C. King Charney, is almost too well known to the profession to require introduction. For many years active in the distribution of motion picture raw stock, Charney has for a number of years represented Agfa film in Hollywood. Today, with a reorganized American factory producing the film he handles, and with both that factory and his own organization committed to a policy of active cooperation with cameramen and laboratory workers, his move into the new quarters signals his continuance as a positive factor in the business of providing the celluloid sinews of motion picture production.

Pete Smith Sneaks Up

MGM'S short subject narrator does a candid shot at the candid craze and incidentally tosses in the history of photography and tips to photography fans.

Pete Smith, Metro-Goldwyn-Mayer short subject writer and commentator, is the latest addict of the candid camera. "Candid Camera Maniaes", soon to be released, presents a typical Smith insight into the candid camera craze that is currently sweeping the country, and

also is interesting for its tabloid history of photography.

Smith's new short subject study of the camera is more concerned with the practical side of photography, which began with Daguerre, inventor of the daguerreotype in 1837.

Just one hundred years ago the Frenchman made the first photograph, when he "fixed" on a specially prepared silver-coated plate a reproduction of a corner of his studio. As far as is known, that was the first actual photograph.

"Candid Camera Maniaes" dramatizes Daguerre's achievement, and remarks on its importance to photography. However, Pete points out that the French artist was strictly a "one-take" cameraman. Under Daguerre's system only one picture could be taken.

An Englishman, Scott Archer, perfected in 1851 a "wet colodion plate" from which paper positives could be printed. Yet with the added impetus of Archer's discovery, photography still had many disadvantages. The picture had to be developed immediately after it was taken.

Taking pictures in the '50's was a hectic performance. The portraitist had to prepare his plate, rush it to the camera, expose it and rush it back to the dark room for immediate development, all within ten minutes. And the photographer in the field had to carry his dark room with him.

These crude, but important, stages in the development of the camera all are described in "Candid Camera Maniaes." The photograph studio of the '90's, crowded with newlyweds and family groups; use of the first pocket camera,



Pete "Candid" Smith



the forthcoming short show, hits the highspots from Daguerre's first photograph to modern fan frenzy.

which appeared about 1900; development of the news camera, all are shown in the short subject.

Featured, of course, is the candid camera newest development and, according to Pete Smith, one of the most important.

Several tips to amateur photographers are included in "Candid Camera Maniacs." Angle shots, for diversity of pose and for unusual effect, are explained; use of colored filters and the arrangement of interior lighting are shown. Pete also discloses tricks that can be used to advantage, such as kicking up dust into the sun's rays for a beautiful effect, and use of several cut-out photos to make a composite scene.

The narrator lays no claim to being an expert photographer, but states he is merely acting as spokesman for the thousands of camera addicts at work today.

All popular makes of candid cameras were used in filming "Candid Camera Maniacs". Avid lens fans will recognize their favorite camera in the short, but will see no preference tendered toward any one.

New Bantam Case

Kodak's two section "open front" field case features handiness; has spring steel frame for safety.

Eastman Kodak Company last month put on the market a new "open-front" field case for their Kodak Bantam Specials, that permits quick operation. It sells for \$8.50.

The new case is made in two sections. There is a skeleton inner shell that holds the camera horizontally in picture-making position and a folding outer shell that drops down hinge-fashion, out of the lens field. The outer shell fastens with five glove-snaps and it can be taken off entirely if the user wishes.

Construction is of tan "bridle" leather. Neck strap rings are at the upper corners of the inner shell, which is lined

Light Meters and Color

Proper distribution of lighting intensities is vital in color photography; variations in individual meter readings demand common sense practice in their use.



Eastman Bantam Case

with velveteen and fits the camera body snugly. A spring-steel frame behind the velveteen lining gives sufficient "safety grip" but still allows quick removal of the camera for reloading; and a cut-out at the back gives ready access to the sliding film window cover.

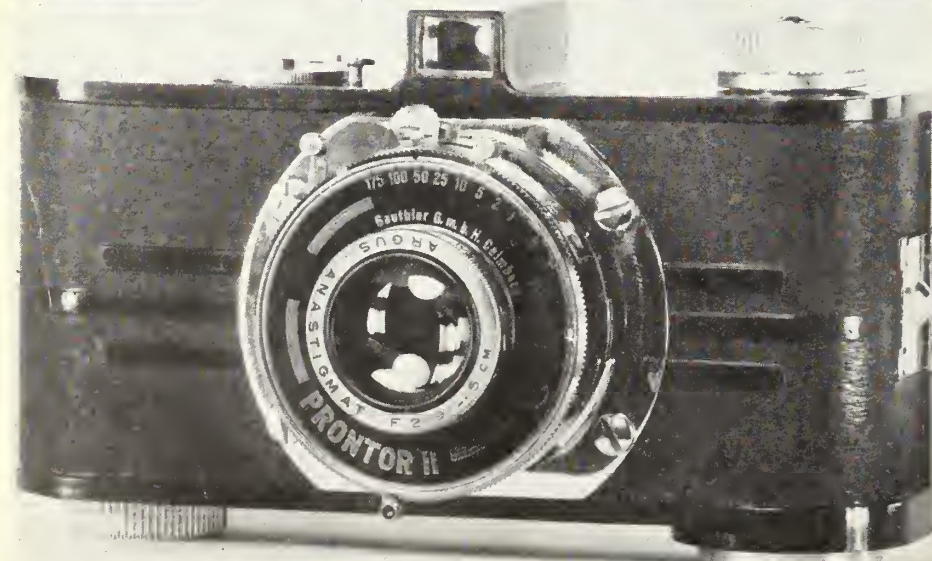
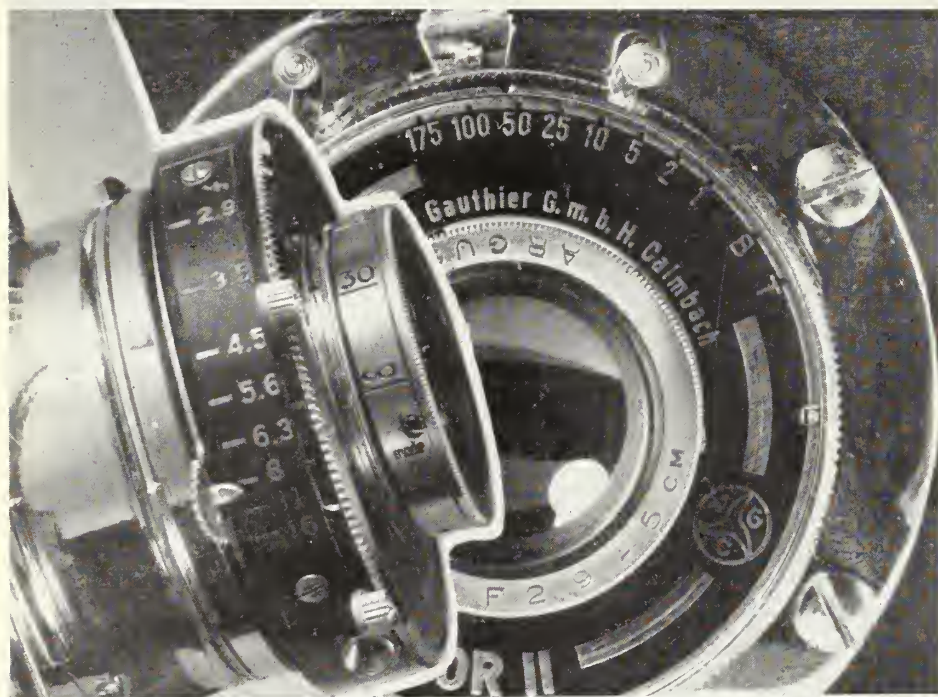
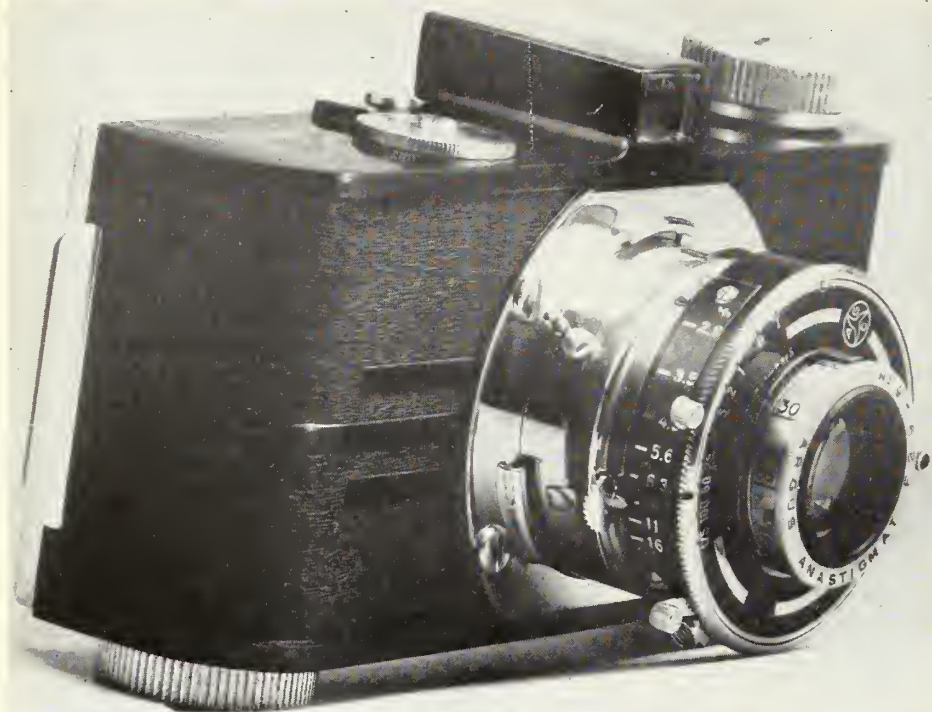
An interesting and informative slant on the relationship of proper usage of photronic exposure meters to color photography, which also has a number of practical applications to black-and-white work. Dr. Thomas S. Curtis, the writer, heads the well-known research laboratory operating under his name.—Ed.

Success or failure of a color shot is measured largely in terms of the proper distribution of light intensities over the subject and the recording of a correct exposure to bring about a printable scale of tones in the resulting color separation negatives.

The modern photronic exposure meter, as typified by the Weston for example, gives the color photographer a certain and dependable yardstick for the measurement of such light intensities in the highlight, middle tone and shadow regions. The proper use of such a meter reduces failure due to incorrect exposure to a minimum. Furthermore, it makes possible the selection beforehand of any desired scale or key of lighting to suit the mood of the subject.

The photronic meter is an instrument which deals in values of electric current so small as to require extraordinary sensitivity in the instrument. For this reason the Weston meter should be treated with the respect and care accorded any other fine scientific instrument. Meters should not be dropped or subjected to mechanical abuse and under no circumstances should the fingers be permitted to come into contact with the multiple lenses covering the electric eye. Accumulations of dust, scum, moisture or perspiration on the lenticular surface will inevitably bring about false readings and subsequently falsify results.

It has been the experience of our laboratories that most photronic meters vary considerably in the reading of a given light value. We have had



meters fresh from the dealer's stock that varied as much as 200 per cent when one meter was compared with the other. Where such variation is discovered the general rule is for the owner to rush down to a testing station to have the meter reset or recalibrated.

In our experience such recalibration is seldom necessary or desirable. If the glass over the electric eye be kept clean and the meter be given the care that any scientific instrument should receive, the fact that that particular meter reads high or low as the case may be has no bearing upon its utility or dependability in service.

When a new meter is purchased it should immediately be compared in its foot candle power reading with the one that has been in use if the owner of the new meter has long been addicted to the use of such an instrument. If the new meter reads a markedly different value on a given light intensity, then a different Weston factor should be assigned to that meter. Under no circumstances should two Weston meters be used interchangeably by one operator without some plain and definite marking appearing on the case of each indicating its normal Weston value. Indiscriminate use of two meters which do not read alike leads to endless confusion and disappointment, frequently giving rise to the opinion that such meters are not dependable.

As an example of the practical use of such instruments it may be mentioned that in the hands of three different commercial color photographers we know of three Weston meters to which respectively have been assigned Weston speed ratings of 6, 8 and 12 for our Curtis Color Cameras under identical light conditions. All three operators use their cameras and their meters with equal success and yet the one meter apparently reads twice as high as the other.

The practice that we recommend and one which has proven highly successful in dozens of cases is that the particular Weston meter to be used with a given camera be sent to the laboratory for calibration against that particular camera or emulsion. Thereafter and so long as the meter is properly taken care of, accurate and dependable readings will subsequently ensue.

The photronic meter is one of the most valuable tools ever placed in the hands of a color photographer. Properly used it will save hundreds of dollars on a single set involving many models and will turn failure into certain success in nine out of ten exposures. Improperly used it is a liability and a hazard.

THOMAS S. CURTIS

THE NEW ARGUS is shown in a photographic layout by Paul Allen that graphically supplies every item of information needed about the new instrument, which soon will be on the market. With an f.2.9 lens it will sell for \$25.



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EASTMAN KODAK COMPANY, ROCHESTER, N. Y.

Superpan and Infra-Red

A detailed charted comparison of these two negatives, of interest to photographers and those concerned with selecting costume and set colors for use with Infra-Red.

This is an elaboration by Dr. Herbert Meyer, of C. King Charney, Inc., distributors of Agfa film, of a study which was published in the organization's limited circulation house organ, *Agfa Motion Picture Topics*, August-September, 1937, issue. The charts illustrating the study are reproduced through the courtesy of Dr. Meyer.—Ed.

It has been some time since panchromatic negative emulsions were first introduced and generally accepted by cameramen as the most suitable medium for the transfer of visual impressions to the screen. Experience since acquired has provided all photographers with sufficient knowledge of color response of panchromatic film and its typical deviations from that of the human eye. Differences in manufacturing methods, in selection and application of sensitizing chemicals, still cause prevailing panchromatic types to show minor variations in color response, necessitating slightly different filter factor charts for each product.

Despite these detail variations, however, there is a fundamental similarity between color response characteristics of all panchromatic products, regardless of manufacture. Wedge spectrograms of various competitive products of this type show essentially similar curves, and a composite curve made up from the responses of all would, unlike many composite type curves obtainable in other fields, be sufficiently akin to the individual response curve of any of the products used in the comparison so that it would be plain that data deducible from the composite would, with only minor corrections, be equally applicable to any of the individual products.

In practical terms this means that users of these emulsions have available a universal yardstick by which to measure not only the individual color response characteristics of any given film, but the "normal" panchromatic rendition of any given color, both with and without the use of color filters.

Experience in use of panchromatic film types has made it possible for a cameraman to look at a sample of any material or pigment and predict with very fair accuracy how it will be rendered photographically. This is generally true regardless of whether the object used will be photographed under normal, unfiltered conditions or with the use of color filters.

With the introduction of Infra-Red sensitized film for photographing night effects in the daytime, the question of color response appears in a new light, requiring additional research and acqui-

sition of corresponding experience. The human eye, insensitive to Infra-Red radiation, can no longer serve in calculating photoactinic intensities reflected or absorbed by pigments within the

special range of wave lengths to which this new medium is sensitized.

The introduction of these invisible wave lengths likewise destroys the usefulness of the familiar yardstick of typical panchromatic color response. It is entirely possible to have two specimens of a textile or pigment which appear identical to the eye, and which photograph identically on the familiar panchromatic emulsions, only to find that when photographed solely with these invisible radiations the two ap-



GENE KORNMAN, member of Local 659, IATSE, shoots thousands of stills of 20th Century-Fox personalities, and here are some of his effects. Sonja Henie, June Lang, Irvin S. Cobb and Alice Faye all are familiar faces. The little miss lower center is June Storey, who gets her best role to date in the spectacular "In Old Chicago." June plays the lass who milks Mrs. O'Leary's famed cow that started the 1871 Chicago fire. Scenes from the sensational fire sequences in the picture are in the Lighting-Sets section.

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EASTMAN *SUPER X*
PANCHROMATIC NEGATIVE

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parently identical objects photograph very differently, in proportion as one may absorb and the other reflect these radiations.

A practical study of this problem has been undertaken, and in the following the methods used and the results obtained are described.

It was determined that the most practical tests would be those in which direct comparison could be made between the color response of the new Infra-Red sensitized film and a familiar type of panchromatic emulsion. The results obtained with the latter naturally serve as a sort of standard measuring stick by which the results obtained on the infra-Red sensitized emulsion could be compared to a familiar standard and if need be easily recalibrated in terms of the precise type of panchromatic emulsion commonly used by any individual.

The test subjects, it was decided, could most advantageously be standard textiles of a wide variety of shades and colors. This is perhaps obvious, for when Infra-Red sensitive film is used in production for making night effects in the daytime, one of the factors most necessary to be coordinated with the normal effects obtained in the body of the production is the photographic rendition of costumes. It is important to be able to avoid any risk that the tonal rendition of any feature of an important player's costume may change noticeably between a normal day shot or interior scene and a closely intercut Infra-Red night effect.

Knowing that this method yields but a qualitative analysis of the problem in question, it was thought advantageous to include in these tests as many color shades as possible so as to obtain at least a sufficient amount of individual comparative data which would permit the formulating of rather broad conclusions. It was equally necessary to use in these tests standard materials and colors so that the results could be applied practically by any cameraman or costumer. For this purpose the Standard Color Card of America, issued by the Textile Color Card Association, Inc., of the United States (8th Edition, 1928) was selected as a testing object. This card, which was made available through the courtesy and cooperation of the Western Costume Company of Hollywood, includes and lists 192 fabrics dyed in different color shades, each shade being defined by a standard trade name. These Color Cards are available in most studio costume departments, and make it possible to apply the results of this test in a practical way almost universally.

In the course of these tests the Color Card was photographed with a Leica camera in four sections on Agfa Superpan and on Agfa Infra-Red Type B

Color	S	I	Color	S	I	Color	S	I	Color	S	I
FRENCH BEIGE			PEACH			PUTTY			ECRU		
MARRON GLACE			CRAB APPLE			SAND			ORCHID PINK		
LEAFMOLD			LACQUER			BLOSSOM			SILVER-WING		
FIESTA			ALMOND GREEN			OLD ROSE			CORAL		
CASTILIAN RED			BLUE SPRUCE			LUPINE			AQUA-GREEN		
GOYA			JUNGLE GREEN			QUEEN BLUE			CROCUS		
FRENCH GREY			OLD GOLD			GRECIAN ROSE			JASMINE		
TURTLE-DOVE			GOLD			BOIS de ROSE			JADEITE		
LILAC			BRONZE			POMPA-DOUR			PERI-WINKLE		
WISTARIA			RUBELLITE			BLUEBIRD			FUCHSIA		
CHART-REUSE			HOLLY-HOCK			CHAMOIS			FLAX		
OLIVE			MULBERRY FRUIT			CRACKER			CARMINE		

● Chart I. Without Filter.

Negative, using bright sunlight and applying the following exposure data:

Superpan without filter—f:12.5—1/60 second.

Infra-Red without filter—f:12.5—1/60 second.

Superpan with Wratten Filter 29F—f:5.6—1/60 second.

Infra-Red with Wratten Filter 29F
f:5.6—1/60 second.

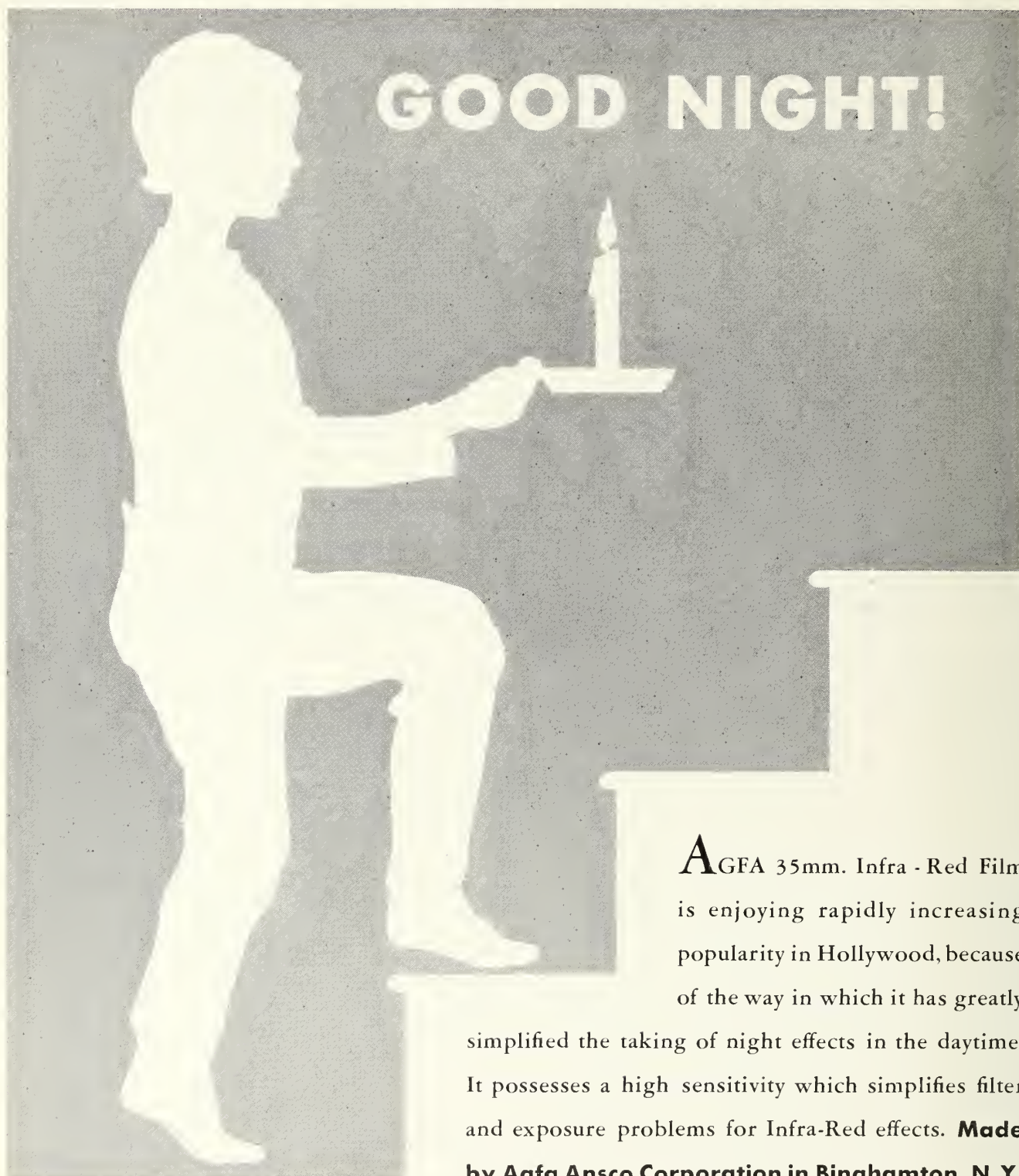
The developed negative records, which were already closely alike in average density, were then enlarged to 3x10 paper prints, whereby the exposure given was carefully adjusted for each nega-

tive to yield prints of practically equal density levels.

Figures 1 to 1A are a reproduction of these records comparing the color rendition of Superpan (S) and Infra-Red (I) without filters, that is, for straight

Color	S	I	Color	S	I	Color	S	I	Color	S	I
FRENCH BEIGE			PEACH			PUTTY			ECRU		
MARRON GLACE			CRAB APPLE			SAND			ORCHID PINK		
LEAFMOLD			LACQUER			BLOSSOM			SILVER-WING		
FIESTA			ALMOND GREEN			OLD ROSE			CORAL		
CASTILIAN RED			BLUE SPRUCE			LUPINE			AQUA-GREEN		
GOYA			JUNGLE GREEN			QUEEN BLUE			CROCUS		
FRENCH GREY			OLD GOLD			GRECIAN ROSE			JASMINE		
TURTLE-DOVE			GOLD			BOIS de ROSE			JADEITE		
LILAC			BRONZE			POMPA-DOUR			PERI-WINKLE		
WISTARIA			RUBELLITE			BLUEBIRD			FUCHSIA		
CHART-REUSE			HOLLY-HOCK			CHAMOIS			FLAX		
OLIVE			MULBERRY FRUIT			CRACKER			CARMINE		

● Chart 1-A. With Wratten 29F Filter.



AGFA 35mm. Infra - Red Film is enjoying rapidly increasing popularity in Hollywood, because of the way in which it has greatly simplified the taking of night effects in the daytime. It possesses a high sensitivity which simplifies filter and exposure problems for Infra-Red effects. **Made by Agfa Ansco Corporation in Binghamton, N. Y.**

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Color	S	I	Color	S	I	Color	S	I	Color	S	I
CHAMPAGNE			BRITTANY			NUDE			BURNT ORANGE		
BEIGE			QUIMPER			BISQUE			TERRA COTTA		
FALLOW			PEASANT BLUE			MONKEY SKIN			HENNA		
DEER			TOPAZ			NEW COCOA			MAHOGANY		
BEAVER			GOLD BROWN			SAXE BLUE			HELIO-TROPE		
CLEOPATRA			BROWN			ELECTRIC			PRUNE		
CH'ING			CASTOR			SAPPHIRE			EGG PLANT		
SPRING GREEN			TAUPE			WEIGELIA			CORK		
EMERALD			ROSE TAUPE			STRAW-BERRY			SANDAL-WOOD		
HUNTER			MONSIGNOR			RASPBERRY			OAKWOOD		
MYRTLE			PATRIARCH			CLARET			TOBACCO		
BOTTLE GREEN			IMPERIAL			BURGUNDY			NEGRO		

● Chart 2. Without Filter.

day photography. Also compared is the color response of the same film types plus a red filter, duplicating exposure conditions for photographing night effects in the daytime.

The reproduction of the test object when photographed without filter does

not seem to indicate a great difference between Superpan and Infra-Red. Yellow seems to be more intense when recorded on Superpan. It is quite interesting to notice that the response of the Infra-Red to the green pigments is practically as strong as that of Super-

pan, although Agfa Infra-Red negative is not sensitive to green, so that the response must be attributed to Infra-Red reflections from the green pigments.

Turning now to comparison of prints reproduced from Superpan and Infra-

Color	S	I	Color	S	I	Color	S	I	Color	S	I
CHAMPAGNE			BRITTANY			NUDE			BURNT ORANGE		
BEIGE			QUIMPER			BISQUE			TERRA COTTA		
FALLOW			PEASANT BLUE			MONKEY SKIN			HENNA		
DEER			TOPAZ			NEW COCOA			MAHOGANY		
BEAVER			GOLD BROWN			SAXE BLUE			HELIO-TROPE		
CLEOPATRA			BROWN			ELECTRIC			PRUNE		
CH'ING			CASTOR			SAPPHIRE			EGG PLANT		
SPRING GREEN			TAUPE			WEIGELIA			CORK		
EMERALD			ROSE TAUPE			STRAW-BERRY			SANDAL-WOOD		
HUNTER			MONSIGNOR			RASPBERRY			OAKWOOD		
MYRTLE			PATRIARCH			CLARET			TOBACCO		
BOTTLE GREEN			IMPERIAL			BURGUNDY			NEGRO		

● Chart 2-A. With Wratten 29F Filter.



BOB De GRASSE, first cameraman on "Stage Door," is a veteran member of local 659, IATSE, and has been photographing stars on the Gower Street lot for years. His advanced style of photography is a definite incentive to progress by the younger generation of cameramen. His second on the picture was George Diskant and his assistant Emmitt Berkholtz, both members of Local 659.



Big Pictures "Stage Door"

Hailed by all previewers last month was RKO Radio's "Stage Door," the motion picture version of the Broadway hit of the same title by Edna Ferber and George Kaufman. In this case, "motion picture version" is specific and, in fact, especially pertinent, for here was a smash stage success that was radically revised for the screen by Morrie Ryskind and Anthony Veiller, with director Gregory La Cava doubling between script and direction and yet the chorus of praise conspicuously drowned out the usual wails and bemoanings of such lese majeste.

"Stage Door" is the story of the struggles and heartaches of talented young women in the search for theatrical fame. Its principal setting is the Footlights Club,

dingy New York of an actual playhouse.

Here live several Broadway, among them a dancer, and Linda (won her the crown as Menjou), a Philadelphia

Socialite Terry (her wealthy father's career. She registers

The boarding quarters with Jean, contrasting background.



After the show, Powell goes backstage to Jean's dressing room, asks her to go out with him. She accepts, more to spite Linda than for any other reason. Jean has further revenge on Linda when flowers arrive from Powell, and later when the producer's car calls to take her to his penthouse. Resplendent in ermine coat, borrowed from Terry, she gloats over Linda, as she sweeps from the house.

Kaye keeps an appointment to read for Producer Powell. She has looked forward to this day with great anxiety. Informed by a secretary that "your appointment is cancelled," she faints.

The let down of her hopes is more than she can stand.

Terry drops in during this excitement. She is furious, storms past a protesting secretary and into the producer's office. She gives him a stinging tongue lashing for refusing to see the girls who pin their hopes upon an interview with him.

Richard Carmichael (Pierre Watkins), attorney for the Randall family, offers Powell money to back a play. He refuses to divulge his client's identity, but states there is one condition: Terry must have the lead. The family hopes to prove that she is not an actress

by having her open on Broadway in a glorious flop.

Summoned to Powell's penthouse, Terry is told she has been selected for the lead in his Broadway play because of the fine acting ability she displayed in his office.

When Jean arrives at the penthouse, Terry assumes a romantic pose, pretends a love scene has been interrupted. Jean goes into a rage, leaves the house, convinced by the kidding that Terry has double-crossed her.

The Footlights Club girls give a birthday party for Kaye. During dinner, the news arrives that Terry has won the



RKO Hit

ing house, reminiscent
o people of the theater.
girls seeking fame on
tland (Ginger Rogers).
Patrick), whose beauty
ony Powell (Adolphe
er of stage shows.
marine Hepburn) defies
ome to espouse a stage

erry is forced to share
their strong wills and
ash at their first meet-



Terry faces many wisecracks as she displays supreme confidence in her ability to succeed on the stage. She draws fire from all the girls, except Kaye (Andrea Leads), who explains that the girls aren't as hard as they sound, but talk that way to hide their true feelings.

The night of Jean's first appearance at a night



club. Powell is at a ringside table with Linda Shaw. Observing Powell's interest in Jean, Linda makes audible wisecracks about the dancer.

Jean dances near Powell's table. Jean overhears Linda's uncomplimentary remarks, takes a punch at Linda with the cane she uses in her dance routine.



role Kaye coveted. Kaye goes to pieces, but defends Terry when the others condemn the "rich girl" for getting the role.

Powell starts production and soon learns he has a rank amateur on his hands, and a difficult one to handle. Fed up with director and cast dissention, he tries to buy himself out of the bargain. Carmichael refuses his offer, is pleased to learn the play will be a flop.

By the opening night, Terry is near collapse, fearful of the approaching ordeal. Kaye, too sick to attend the show, tries to hearten Terry, gives her a cherished good luck ring to wear. But

when Terry leaves the house, Kay climbs the fire escape, plunges to a suicide death.

Joan confronts the nearly hysterical Terry in her dressing room, bitterly accuses her of causing Kaye to commit suicide. Completely overcome by the tragedy, Terry refuses to go on in the show.

Persuaded that all great actresses are made by tragedy, and that the tradition of the theatre demands "the show must go on," Terry finally makes her entrance.

Under emotional stress Terry rises to brilliant heights and gives a magni-

ficent performance. Storms of applause tell the eager ears of Powell that another star has been born to him. In a curtain speech, Terry gives the credit for her success to Kaye.

Overcome with grief, Jean goes to Terry's backstage dressing room to apologise. The two slip out a side door together, while Powell, eager to congratulate his new "find," and the press storm outside for admittance. Life flows on. Jean marries her boy friend (perhaps). Terry continues in the theater. Another parade of young girls register at the Footlights Club. It is an eternal cycle.



Color	S	I	Color	S	I	Color	S	I	Color	S	I
PEARL GRAY			APRICOT			PALMETTO			ORCHID		
SILVER			HONEYDEW			EVERGREEN			AMETHYST		
NICKEL			TANGER-INE			SISTINE			PLUM		
STEEL			PISTACHE			COPEN-HAGEN			SUNSET		
NATIONAL			TARRAGON			GOBELIN			TAN		
YALE BLUE			RESEDA			FLEMISH BLUE			PABLO		
MARINE			GERANIUM			PEKING BLUE			TERRAPIN		
NAVY 1			SCARLET			MAPLE SUGAR			CHERRY		
ENSIGN			CARDINAL			MUMMY			HARVARD CRIMSON		
NAVY 2			DARK CARDINAL			OLIVE WOOD			RUBY		
NAVY 3			GARNET			AUTUMN			AMERICAN BEAUTY		
MIDNIGHT			MAROON			SEAL			MAGENTA		

● Chart 3. Without Filter.

Red negatives exposed with 29F Wratten filter, a remarkable amount of variation will immediately be noticed in these records. Practically every pattern of a bluish shade, regardless of whether it represents a neutral blue or one of the group of violet or greenish-blues, is prominently registered on the

Infra-Red records and accordingly appears in the prints relatively light, while the Superpan lacks response to these colors due to the absorption of their visible radiation by the 29F filter. It is, therefore, safe to assume that all these blue pigments reflect Infra-Red radiation very strongly.

The same will be found in comparing the records of the green color shades, which also, and apparently for the same reason, are registered more intensely on the Infra-Red negative than on the Superpan negative.

To photographers it might be quite surprising that red shades photograph

Color	S	I	Color	S	I	Color	S	I	Color	S	I
PEARL GRAY			APRICOT			PALMETTO			ORCHID		
SILVER			HONEYDEW			EVERGREEN			AMETHYST		
NICKEL			TANGER-INE			SISTINE			PLUM		
STEEL			PISTACHE			COPEN-HAGEN			SUNSET		
NATIONAL			TARRAGON			GOBELIN			TAN		
YALE BLUE			RESEDA			FLEMISH BLUE			PABLO		
MARINE			GERANIUM			PEKING BLUE			TERRAPIN		
NAVY 1			SCARLET			MAPLE SUGAR			CHERRY		
ENSIGN			CARDINAL			MUMMY			HARVARD CRIMSON		
NAVY 2			DARK CARDINAL			OLIVE WOOD			RUBY		
NAVY 3			GARNET			AUTUMN			AMERICAN BEAUTY		
MIDNIGHT			MAROON			SEAL			MAGENTA		

● Chart 3-A. With Wratten 29F Filter.

Color	S	I	Color	S	I	Color	S	I	Color	S	I
WHITE			PINK 1			FLESH			POPCORN		
IVORY			PINK 2			PALE PINK			SPANISH YELLOW		
CREAM			PINK 4			BABY PINK			ORANGE		
POLAR BEAR			PINK 5			TURQUOISE			PRINCETON ORANGE		
LEGHORN			LT. BLUE 2			BLUE TURQUOISE			GOLDEN POPPY		
MAIZE			LT. BLUE 3			GROTTO BLUE			INDIAN ORANGE		
NILE			LT. BLUE 4			PEACOCK			PAPRICA		
LAVENDER			LT. BLUE 6			GULL			PIMENTO		
MIGNON			TEA ROSE			CRANE			ROYAL BLUE		
VIOLET			SALMON PINK			PIGEON			PURPLE NAVY		
PANSY			SHELL PINK			GREBE			INDEPENDENCE		
PURPLE			CORAL BLUSH			SMOKE			HOMAGE BLUE		

● Chart 4. Without Filter.

very closely alike on Superpan and Infra-Red negative, except in the case of rather dark reds, which Infra-Red negative seems to register stronger. It will be found, however, that, regardless of the color, deep shades are generally rendered lighter in prints from the Infra-Red negative. This fact is prob-

ably attributable to the difference in gradation between Infra-Red and Superpan when photographing with a Wratten filter 29F.

Brown, orange, pink and gray shades seem to be recorded rather alike by both film types when applying the 29F

filter.

A close study of these records should interest and aid the cameraman as well as anyone concerned with the selection of costumes and set-colors when contemplating the use of Infra-Red negative film.

DR. HERBERT MEYER

Color	S	I	Color	S	I	Color	S	I	Color	S	I
WHITE			PINK 1			FLESH			POPCORN		
IVORY			PINK 2			PALE PINK			SPANISH YELLOW		
CREAM			PINK 4			BABY PINK			ORANGE		
POLAR BEAR			PINK 5			TURQUOISE			PRINCETON ORANGE		
LEGHORN			LT. BLUE 2			BLUE TURQUOISE			GOLDEN POPPY		
MAIZE			LT. BLUE 3			GROTTO BLUE			INDIAN ORANGE		
NILE			LT. BLUE 4			PEACOCK			PAPRICA		
LAVENDER			LT. BLUE 6			GULL			PIMENTO		
MIGNON			TEA ROSE			CRANE			ROYAL BLUE		
VIOLET			SALMON PINK			PIGEON			PURPLE NAVY		
PANSY			SHELL PINK			GREBE			INDEPENDENCE		
PURPLE			CORAL BLUSH			SMOKE			HOMAGE BLUE		

● Chart 4-A. With Wratten 29F Filter.

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negative and
fine prints reveal
... picture value.

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Laboratory

More Allison

Laying the groundwork for a laboratory Book of Tables along lines Westerberg has so ably done for photographers.

One of the outstanding features of INTERNATIONAL PHOTOGRAPHER has long been Fred Westerberg's "Cinematographer's Book of Tables." (A new and revised edition of the "little red book" now is in preparation.) Under the publication's new program of gradually expanding to afford a complete technological news and service publication to all branches of the amusement industry, there have developed a number of requests for similar features pertaining to other branches of the motion picture industry. Plans now are in motion for expanding the "book of tables" idea to serve the laboratory, sound, projection, etc. INTERNATIONAL PHOTOGRAPHER is fortunate in initiating this program with a starter toward a "Laboratory Book of Tables," under the by-line if such an able research chemist as our contributing editor, Donald K. Allison. It is no over-statement to announce that Mr. Allison's series (later to be published in book

form) will be an important and practical addition to available data on film processing practice.—Ed.

The modern trend in all industrial processing is unquestionably toward increased precision of control, and it is therefore only natural that chemical supervision of the series of chemical operations which constitute the photographic process should likewise receive serious study. Recent papers by Crabtree (Jour. Soc. Mot. Pict. Eng., Spg. Conv., 1937) on the quantitative relationships in potassium alum hypos. and by the author (Intl. Phot., Apr., May, June, 1937; and Jour. Soc. Mot. Pict. Eng., Spg. Conv., 1937), have shown some of the possibilities of chemical control.

With the constantly increasing use of color photography in motion pictures, chemical control becomes an absolute necessity. Processes which yield excellent results in the test-tube stage will only give these same results in produc-

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tion under conditions of the most rigorous laboratory control. All of the producing color companies today have found it necessary to employ analytical methods in the control of their processing operations, and it is the purpose of this present series of papers to discuss the chemistry of the various photographic operations, and to describe the analytical methods used in the chemical laboratory for maintaining both color and black-and-white processing solutions at maximum efficiency. Methods developed by the author and in use today by the major color laboratories for controlling their processing solutions will be described. These will include analytical methods for the major constituents of iron tone, uranium tone, iodine bleach, dye-tone, developer, hypo and bi-pack clearing solutions.

The following basic equipment will be required for the analytical operations. Any additional specialized apparatus will be described and illustrated as occasion requires. Apparatus carrying the Seal of Approval of the new Technical Jury of the IATSE will be recommended; and dealer sources of such apparatus will be supplied upon request.

- 3—Burettes, 100 ml. Schellbach (automatic preferred).
- 3—Burettes, 100 ml. plain (automatic preferred).
- 2—Pipettes, 10 ml.
- 2—Pipettes, 25 ml.
- 2—Pipettes, 50 ml.
- 1—Flask, volumetric, 100 ml.
- 1—Flask, volumetric, 500 ml.
- 1—Flask, volumetric, 1000 ml.
- 10—Flasks, Erlenmeyer, 200 ml.
- 5—Funnels, 60°, 100 mm. diam., 300 mm. stem.
- 2—Burners, Tirrill type.
- 1—Burner, blast, round flame.
- 1—Analytical balance, capacity 100 gms., sensitivity 0.1 mg.
- 1—pH Meter.
- 1—Colorimeter; Wedge or Duboseq.

D. K. ALLISON.

Voltage Control

Westinghouse DT-5 Mercury Tube wins approval at Hal Roach lot for lab and process voltage regulation.

Laboratory workers will be interested in the results obtained at Hal Roach studios by Charles Levin, lab superintendent, working in cooperation with Thomas Reid of the Westinghouse Electric Company in securing proper voltage regulation to maintain an even flow of current to printing machines, process cameras and various other apparatus which derive their power from direct current from a generator set.

Generator fluctuations cause the voltage to vary, oscillate and change, due to sudden changes in line voltage when loads are thrown on and off from sets using large amounts of lamps and other electrical equipment.

The Roach organization tried several

methods of voltage regulation by mechanical means, even going so far as to discard a generator set which they considered antiquated and to all appearances no longer fit for use—but to very little advantage.

Recently in cooperation with West-

inghouse, Levin installed a DT-5 Mercury Tube voltage regulator and reports that after several tests under production conditions, it has stood up very satisfactorily. The Roach organization recommends this setup highly for laboratory and process departments.

Process

Montage Marches In

Regardless of much-debated meaning of the word, montage, as Hollywood knows it now, is a practical and essential element in modern motion picture production.


The word and even the idea of "montage" has always been a quick stimulus to argument, politely known as a "discussion," in almost any Hollywood gathering. The debate ranges from just what montage is to just how important or unimportant it may be. Realists, weather eye on the "b.o. take," may sneer it off with mutterings against all things "arty." Esthetes will drown the idea in a sea of definitions and theories. Yet a middle course is being drawn

between the banalities of formula picture making and the devious mysticisms of the "cinema art form" fraternity, so that montage already has assumed a practical and essential role in Hollywood production.

A leader in achieving this compromise between bread-and-butter and high-blown theory is Slavko Vorkapich, one-time artist, later film director, now at Metro-Goldwyn-Mayer as an expert on montage sequences, sometimes ambig-




Slavko Vorkapich, Montage proponent.



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ously known as "special effects," for Leo's more important epics.

Not long after the industry was freed from the initial confining restrictions of the microphone, Vorkapich began advocating montage and sold it so well, that today he enjoys the confidence of the top executives and creators at one of the principal organizations in the industry; and today he and others with a similar bent are gradually establishing for montage a definite bracket in the "Hollywood formulae."

For all practical purposes—although even this simple definition undoubtedly will provoke dispute—montage is a particular method of approach to the editing of a motion picture. It is based upon the relationship of frame to shots, shots to sequences, sequences to continuity. Each is considered as sharing an interrelationship; and montage exponents—particularly the Russians—have evolved serious and highly complex theories on the subject.

Montage is a French noun deriving from the verb *monter*—to mount, assemble, put together.

In its wider sense it is used (in Europe) to denote editing in general.

The Russians, particularly Eisenstein and Pudovkin, use it in a more specific sense.

We in Hollywood may call it creative cutting as distinguished from the simple continuity cutting.

Montage is a method of expressing moods, meanings and events by a rhythmic arrangement of images with regard to their form, content and movement.

According to the given problem these images are rhythmically "mounted" either one after the other or one on top of the other—or both.

Montage is a sort of picture language—filmic ideography.

Montage expresses thought and emotion by means of image and motion.

Montage first came to Hollywood in its present form when cameramen added "UFA shots" to their jargon during silent days. These generally were lap-dissolves of a more or less complicated nature, frequently with superimposed camera effects. Sidney R. Kent's decision that Paramount would distribute "Variety" in this country started a trend that brought from Germany Lubitsch. Dupont, Jannings and many other keen-minded workers with radical ideas on film technique.

On the heels of the Germans came the artistic successes of the Soviet's budding film industry. The Russians wore out reels of Griffith's masterpieces studying his methods, and borrowing also from the Germans, evolved a conscious theory of production technique around the montage idea.

Close on the Germans and Russians came the theorists and essayists, just beginning to discover the motion picture as an art form rather than a popu-

lar fad. While all serious workers have since made more or less use of the principles of montage many of the practical-minded members of the Hollywood fraternity have always shied away from openly accepting montage as a routine and fundamental phase of production technique. Consequently, to most of Hollywood montage usually means "special effects," regardless of whether the "special effects" are montage or not.

From a practical standpoint, even though the terminology may differ, nearly all experts and pseudo-experts agree that the important phase of montage is its emphasis upon the securing of emotional and dramatic reactions through the particular manner of editing and the particular combination of cuts, close-ups, pan shots, etc.—entirely independent of the emotional and dramatic content of the actual scenes shown. Thus, a "Poverty Row" producer, editing his picture to build his horse opera chase scenes to a smashing climax, may be achieving perfect montage without any knowledge that the word exists, just as a natural genius for dramatic literature may instinctively construct skillfully, scenes and dialogue with no conscious knowledge of the rules of the theatre.

The great barrier to an understanding between the commercially-minded bloc and the "cinema art" adherents upon film technique generally, is one of words and phrases, rather than actual difference of honest opinion. Men like Slavko Vorkapich today have reconciled these warring viewpoints chiefly through disregarding them and by concentrating on the essential values involved. Their ideas on montage and its application to commercially salable films are eminently practical and down-to-earth. The need for these ideas and slants is not only practical but today it is pressing. There are two fundamental reasons for this. The first is a matter of technical limitations. The second is a matter of story material limitations.

The first impelling reason for montage in modern productions hangs upon several inescapable laws of physics, which result in a current standard of 90 feet per minute for the recording and projection of talking pictures. The introduction of sound to motion pictures, brought with it the situation that it is impossible to record sound on film any slower than 90 feet a minute and still adequately record photographically the microscopic waves in the sound track.

Ideal speed for perfect recording and reproduction with the film sound track would be approximately three times that fast, especially for the higher frequencies; but the film cost, danger of film breaking, and the technical problems involved in handling motors and controls

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both in studio and theatre are such as to prohibit any such speed.

Thus, nothing today can change the fact that no matter how skillfully scenes may be handled so that they have an appearance of fluidity and action (in itself a phase of the montage theory) talk itself will drone along at 90 feet per minute (21 frames per second) and will take up time that might be used for immeasurably more dramatic and story action.

Informed workers in the industry all estimate that it requires approximately seven reels today—with synchronized sound at 90 feet a minute—to tell the same story that was told in silent pictures in five reels.

In no phase of picture making is montage more important than in the telling of a classical or current best-seller story, in which fidelity to the original is demanded by most fans. Confronted with the problems of compressing an over-abundance of story action into the limits of a picture that prob-

ably will play a majority of its bookings on double bills, the producer has the constant headache of talk, talk, talk—at 90 feet per minute. No finer example of the value of montage could be cited in this respect than "David Copperfield," which David O. Selznick produced for Metro-Goldwyn-Mayer and to which Vorkapich contributed impressively.

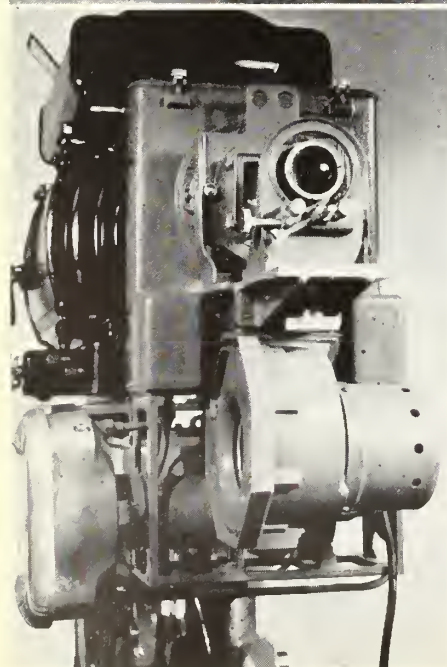
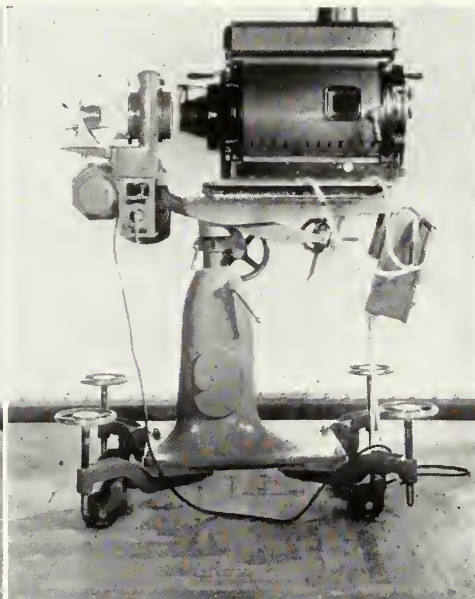
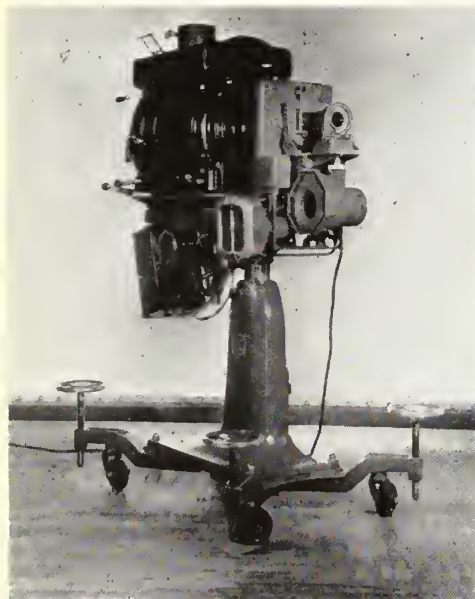
Considered solely on its own merits, montage when properly used, is very much enjoyed by the average motion picture audience. This is illustrated by the fact that many people get more exhilarating "kick" out of the nearly abstract montage of the main title of the major news-reels than many other parts of the program. This aspect leads to the second reason why montage is essential in modern production practice.

Hollywood's devouring maw has churned through the classics, novels, plays, short stories, biographies, original stories and even scores of remakes

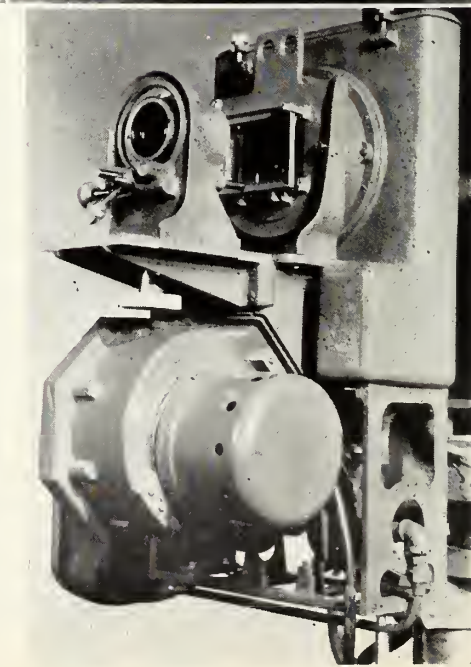
of the hit films of other years. Long before Edison's inventiveness started the picture industry on its way, it had been conceded that there were no new story situations and Hollywood's literary Merlins have not to date succeeded in revising this viewpoint. In fact, the producer who can so much as get a new twist on an old treatment now is deemed fortunate.

Today, anyone who is kidding himself that he has a really new story idea, just hasn't been reading the reviews. All Hollywood can contribute in the way of story telling is FRESHNESS and ORIGINALITY of treatment and viewpoint. Hollywood can tell the Cinderella tale from the viewpoint of the fairy godmother and give it a tragic twist, but it can't change the essence of the plot. If that is changed, the busy story-contriver finds himself—not with a new plot—but probably over in the "Madame X" melodrama section of the bookshelf.

Montage offers a rich new field of



PROCESS FOR STILLS is now offered by George Teague's projection background organization with the introduction of this new stereoptican slide projector, featuring extreme portability and compactness, along with a powerful 5000-watt incandescent lamp, developed by General Electric for this type of work. This permits projection of colored or black-and-white stills on a translucent screen for composition still photographers and also can be used in motion picture work. Using a short focal lens the projector has a throw of 15 feet and gives a picture up to 8x10 feet. Specially designed cooling systems, shown in the closeup shots, protect the slides and optical system from the terrific heat. This is the first "inky" projector of this type available for commercial and advertising photographers with all the features that have made motion picture projection background effects so successful. It plugs in to a 110 AC circuit. Work is now under way on a 7000-watt lamp to give even greater light power. In addition to marketing the new projector, Teague this month is opening a studio on Santa Monica Boulevard at which this type of composite work will be available to all photographers, advertising agencies, etc., with complete facilities for making special process still shots.



opportunity in treatment. It can offset the bugaboo of talk, talk, talk—at 90 feet per minute—by glossing over essential but familiar and uninteresting story action to allow more precious time for new slants on character or comedy or background or novel situations and scenes. Hollywood thus could possibly be daring enough to experiment with the subjective rather than the objective approach to a story and still keep the plot action rolling along so that even a moron wouldn't become uncomfortable. This is the path that is being opened by Slavko Vorkapich and others like him. When to montage is added the avenues opened by projection background photography, the story horizon immediately appears much wider.

There also exists in this connection a tremendous field for sane economies in production costs. Many a scene or sequence will develop in a story treatment to the extent of being absolutely essential to the action, yet it would cost so much if photographed in the traditional way (battles, riots, lavish parties, sports events, scenes requiring costly location trips) as to lift the budget beyond the production program commitments for that particular type of picture. Judicious application of montage can save both the budget and the continuity.

The montage ideas cited above—as practiced by Vorkapich conspicuously at Metro-Goldwyn-Mayer and by industry thinkers on other lots—generally are planned and studied in advance of production in the development of the shooting script. However, montage has an additional value, which cannot be too greatly emphasized. That is its function as a life-saver when something is found to be radically wrong with a picture after the preview.

Montage can be used by the creative editor to plug holes in the story; to condense scenes whose original importance in the script have been diminished and overshadowed by ideas and twists that have developed on the set during production. The familiar “pick-up shots” are nothing but a form of montage. Along these lines, many workers in the independent field are daily accomplishing feats of constructive thinking in montage that would cause some of our conspicuously outspoken theorists of “film art” to do nip-ups in consternation if confronted with the same problems under conditions so adverse from the standpoint of finance and resources.

Montage, therefore, has been developed in recent years by that group of workers of whom Vorkapich has snared the most outstanding recognition, not towards the arty and theoretical, but rather toward the practical and even the essential. Montage today is used to prevent either the producer's money or the audience's time from being

wasted. It is geared to the modern tempo. It is as terse, factual and to the point as today's crisp journalism.

Vorkapich was born in Yugoslavia and educated in Belgrade and Budapest with the idea of becoming an artist. When the World War broke out, he enlisted with a student corps. Impressions gained during the thunder of battle, in later years inspired his montage theories. For years, following other callings, he reviewed fleeting war impressions in his mind until he finally found a way to use them.

After the war he became an artist in Paris, then New York, and finally landed in California. Vorkapich later took up picture direction, and in Hollywood first had an opportunity to experiment with special effects.

His first step in creating a montage is to lay out a script. He studies over what the montage is intended to tell, such as Jeanette MacDonald's rise to fame as an opera star in “Maytime.” He then gathers scenes, pictures of objects or action, or whatever he believes will convey the impression, obtains the negatives, superimposes and arranges them until the effect is a mixture of scenes dissolving into each other, one coming over the other, unusual and telling effects.

Vorkapich sometimes works days on a montage script that will occupy only a few seconds on the screen. Lately, he has collaborated with Herbert Stothart, the composer, who arranges a “musical montage” to go with the pictorial one.

ED GIBBONS.

New Dept's.

Welcome to “IA”

Newcomers to IATSE studio family are cause for new Photographer sections and additions to others.

International Photographer takes great pleasure in this current issue in

welcoming a number of new motion picture technical craftsmen to the IATSE family—the makeup artists, hairdressers, scenic artists and costumers—all of whom last month became affiliated with the IATSE, joining with the West Coast studio locals of cameraman, soundmen, laboratory technicians, and the huge studio mechanics Local 37, with its grips, props, gaffers, special effects, studio projectionists, miniature makers, etc.: as well as the newsreel and commercial photographers in Local 666, Chicago, and Local 644, New York, and the far-flung army of IATSE theater and exchange workers, headed by the projectionists and stagehands.

Our hospitality takes the form of adding new sections to the magazine and expanding present ones. A new department will deal with the work of makeup artists and hairdressers. The technical news of the scenic artists will appear in the lighting and sets section, which heretofore has been devoted to news of the work of Local 37. The prop news, (under local 37's jurisdiction) will be combined in the future with the news of costume departments, since this work is closely parallel.

News of the scenic artists, who work hand in hand with the grips of Local 37, will appear in the Lighting-Sets section. Readers of International Photographer will look forward with interest to further articles on modern perspective and other phases of cinematography and theatrical design from the learned pen of Lew Physioc, president of the scenic artists, and a long time technical editor of International Photographer.

Reeves' Building

Art Reeves buys structure in Hollywood for plant expansion.

Art Reeves, just as International Photographer went to press, purchased a structure at 7512 Santa Monica Boulevard to house his plant and laboratory. The veteran manufacturer of lab, sound and camera equipment will have 6000 feet of increased space to allow for an expansion program for his organization.

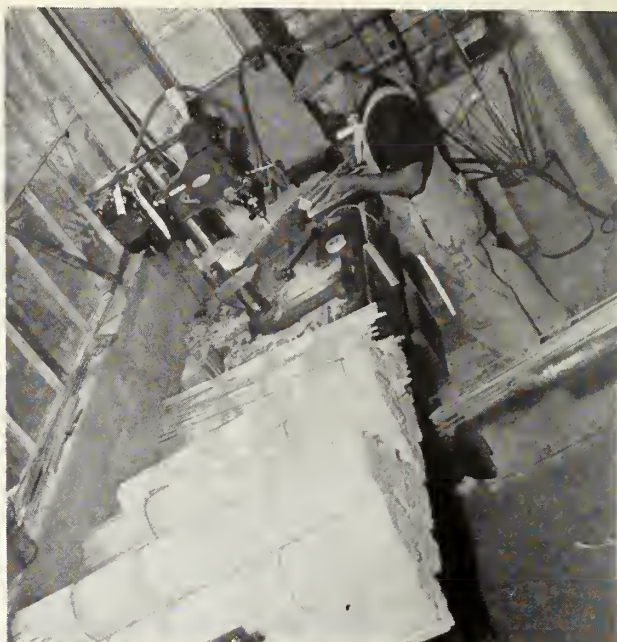
\$100,000 Props for “Robin Hood”

Over 20,000 items listed as Warners' artisans put maces, longbows, quivers, lances, quarter-staves and other medieval items on a modern production basis.

Even with Hollywood studios in the throes of “million dollar pictures,” few recent films have called for such extensive outlay for props and costumes as Warner Brothers' lavish production of “The Adventures of Robin Hood,” now in production in Technicolor. This

film is one of the Burbank studio's big bets on the new season program. It is budgeted at over \$1,600,000 and over \$100,000 of this is for props alone.

More than 20,000 different items listed among the props were turned over last month to “Scotty” More and





PICTURES BY CRAIL

Warner Brothers spared no expense to insure historical accuracy in the props for their Technicolor production, "Adventures of Robin Hood." The full page layout at the right shows studio experts making bows and arrows for Robin Hood's "Merry Men" with the most modern equipment. Above at left is shown the completion of the designs for battle-maces, right top, finishing of staffs for pennons and bottom, the finished products get a tryout.

Bill Kiehle, property men for the company; and most of these props—including some 10,000 arrows—were made in the modern Crafts Building at Warner Brothers' Studio. A large staff was kept busy for many weeks in their manufacture.

The feudal background of the classic yarn calls for quarter staffs, maces, war flails, battle axes, neck and leg

chains, period bread boards, baking sticks, twelfth century trumpets and musical instruments, arm guards, armor for men and horses, money, lamps, drinking vessels, cooking utensils, long bows, cross bows, quivers, lances, pennants, broad swords and scores of other items. All were made in the prop shop from designs taken from valuable old books which deal with that period of history.

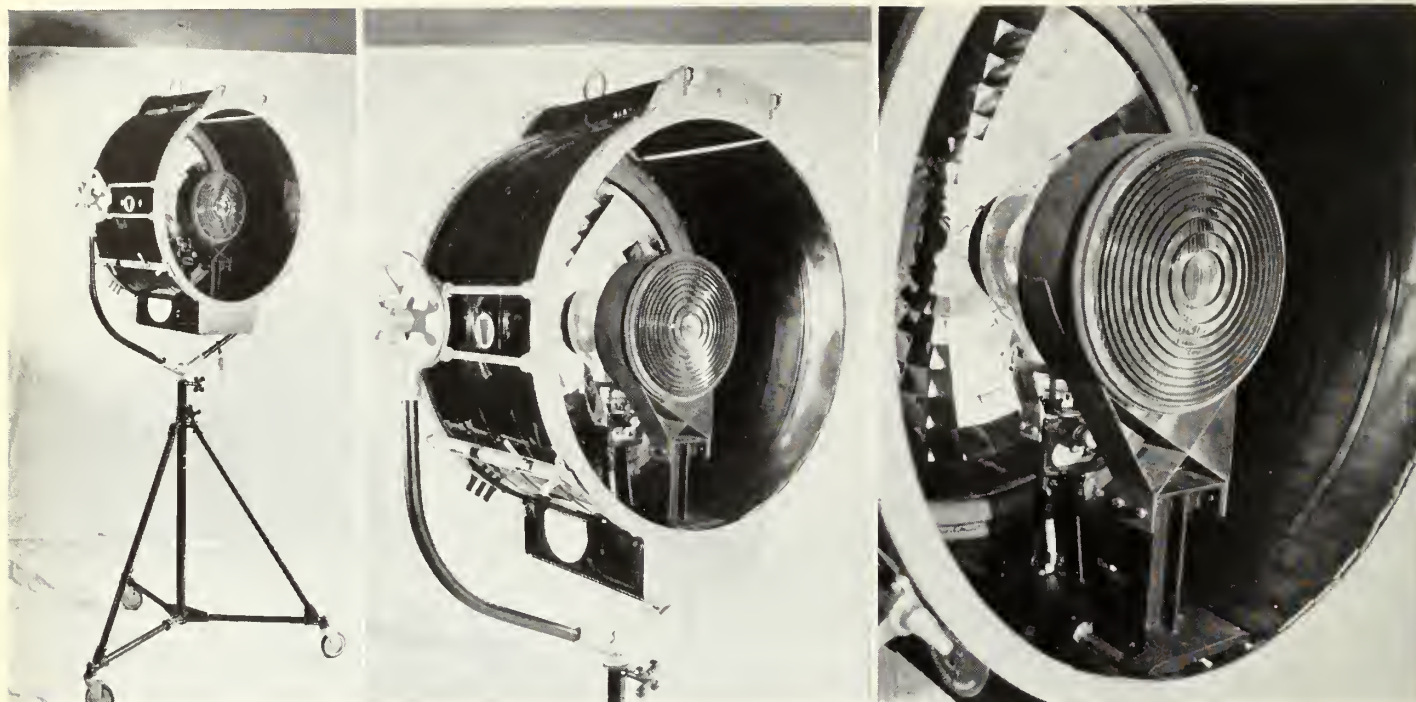
Also needed were saddles, harness and equipment for tinkers, blacksmiths and cobblers. The array overflowed the motorized prop wagon and jammed three baggage cars to the roof when the company went on location near Chico, California, last month.

While most of the props were made right in the studio, a number of soldiers' and knights' saddles, thanks to

Cecil B. DeMille who had them made for "The Crusades," were already made and simply had to be rented from the Western Costume Company.

Thousands of dollars worth of costumes also were manufactured in the studio wardrobe. This particular assignment was more difficult than usual because of the necessity for making them photographically perfect for the Technicolor cameras.

Norman Reilly Raine and Seton I. Miller wrote the Warners' version of "Robin Hood," going back to original sources—the famous old ballads—for their inspiration, and also provided the script. William Keighley, who handled color on "God's Country and the Woman," Technicolor picture, last year, is the director and Henry Blanke is the assistant producer.



Lighting-Sets

B & McA Expands

Lighting equipment firm moves to new and larger quarters to take care of new business and products.

Bardwell & McAlister, Inc., one of the progressive lighting equipment manufacturers, although a comparative newcomer in the motion picture field, have found it necessary to move to new and larger quarters in an expansion program, which is the result of steady increases in volume of business and in the development of new equipment. The firm entered the motion picture lighting field in 1935. The move will be made early this month to a new address along Hollywood's "Manufacturers' Row" at 7636 Santa Monica Boulevard. A new telephone number, HOLLYWOOD 6325, will be adopted, in the moving.

A particular success amongst the company's newer equipment is their Type T-5 Studio Spot, a 24-inch lamp, employing a 5KW globe. This gives an even field of light, eliminating the characteristic black center of the old 24s and is estimated as tripling the light output of the latter type lamps. This is accomplished by means of an auxiliary optical system within the lamp.

Another Bardwell & McAlister development is their streamline 200-watt

Spot, the Keg-lite. This lamp offers a unique lens, designed to kill all spill light without detracting from the full value of the controlled beam.

Pola Eye-glasses

Powerful lights of color shooting revive "kleig eyes;" polarized glasses prove helpful in studio trials.

It is well known that one of the occupational diseases of studio workers in the days before sound was what has been termed "Klieg eyes," an extremely painful malady, which can lead to permanent impairment of vision.

When better and faster film emulsions were developed, smaller and better set lighting units appeared and the number of "Klieg eyes" cases declined. However, with the recent swing to color, with its stronger lighting requirements, eye troubles among studio workers have again increased.

Some workers on the set have tried various types of colored sun glasses without much success. That was to be expected, as most glare is not a matter of color. Sun glasses reduce ability to see as much as they reduce glare, so that the iris of the eye is merely opened wider, and the effect of the glare on the eye remains the same.

Recent experiments on a wide variety of sets shows rather conclusively that

Stillman gets a truck shot effect, moving up on Bardwell & McAlister's new Type T-5 Studio Spot. Closeup at right gives view of the special auxiliary optical system. Below is a view of the company's new streamlined 200-watt Keg-lite spot.



most of the glare present is specular, and not diffuse light. Specular light may be defined as "shiny" light while diffuse light is "non-shiny." All reflected light is one of these two types. Specular light is reflected from the surface of any object while diffuse light is reflected after some penetration of the reflecting surface.

Bothersome specular light is, fortunately, usually polarized, and generally is polarized in approximately the horizontal plane. Thus, if a polarizing screen is fixed with its axis of polarization vertical, most of the glare can be



"IN OLD CHICAGO" is headed for an early preview and this 20th Century-Fox picture will reveal not only a story that reaches deep into the history of the midwest's metropolis in the 80's but also some of the most spectacular scenes in motion picture history. These stills by Frank Powolny, member of Local



659, IATSE, show in the top strip the bucket brigades fighting to save their homes; below in the top strip the oldtime fire engines and lower strip the citizens of Chicago, victims of the fire, among them the pioneer spirits who rebuilt a newer and greater city on the site of the catastrophe.



eliminated without materially affecting the seeing power of the eye.

Pola and other polarizing screens for use on cameras have been in use for some time, but only recently have polarized lenses been available in eye-glasses.

A pair of polarized eye-glasses were tried under various lighting conditions on the set for several weeks and the experience proved that there is little room for argument as to their value in reducing extraneous glare and useless high-lights. These glasses are virtually invaluable

to soundmen, who have occasion to focus lamps and slits in projectors and recorders, since they reduce glare without losing image visibility. For any other craft having the same problems, they undoubtedly are worth investigating.

At present there are two types on the market: Polarized, made by the Marks firm (these can be made to fit prescriptions if necessary) and the Polaroid brand, made and marketed jointly by Bausch & Lomb and American Optical Company. Prices range from \$3.75 to

\$15.00. The Marks type, incidentally can be purchased in a style that snaps over eye-glasses and is practically free from spherical aberration, hence can be used also as a low cost polarizing screen with any of the smaller cameras by suitable mounting in front of the camera lens.

Optical experts point out, however, that while these glasses have a value for studio technicians, they are not a panacea for all glare problems and for many people may be valueless in reducing sun-glare.

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Sound

Reverberation

**New control technique with two
mikes has possibilities; given a
successful trial by Stokowski.**

An interesting change in sound re-
cording technique, which may prove to
be a worthwhile improvement, has been
the subject of considerable experiment
at one studio. Instead of leaving the
ratio of direct to reflected pick-up to
the mixer, the boom man and Provi-
dence, two mikes are used. One is
close to the source of sound and the
other at some distance away from the
sound source.

The close mike is highly directional
and is kept as close to the action as
the camera department will allow. The
distant mike need not be directional as
its function is to pick up reflected sound
only. Two separate sound negatives
are made, one from each mike. These
are developed and printed in the nor-
mal manner. The two tracks are then
mixed and re-recorded and the director
and mixer can concentrate on making
the sound follow the action: at least
in so far as the reverberation is con-
cerned.

It is obvious that more reverberation
is natural in a long shot than in a close-
up. How much more reverberation is
desirable, is a difficult question to an-
swer and it is usually left more or less
to chance, since few directors will let
the mixer do much experimenting on
the set.

However, the new method requires
duplicate recording channels and these
channels must synchronize perfectly.
Small variations in recorder speed, not
noticeable in normal recording, can be
very bothersome in this duplicate re-
cording system.

As far as is known, the first picture
to adequately make use of this multi-
ple channel recording idea was Uni-
versal's "100 Men and a Girl," in which
eight close up tracks of Leopold Sto-
kowski's orchestra were made synchro-
nously. In this picture the objective
was different from mere naturalness in
that Mr. Stokowski wanted to mix the
different orchestral groups into the
whole effect himself. This he could not
do and conduct at the same time. Thus
the eight separate sound tracks were
mixed and re-recorded after consider-
able experimenting by Mr. Stokowski
and the Universal sound department.

J. N. A. HAWKINS, Local 695, IATSE

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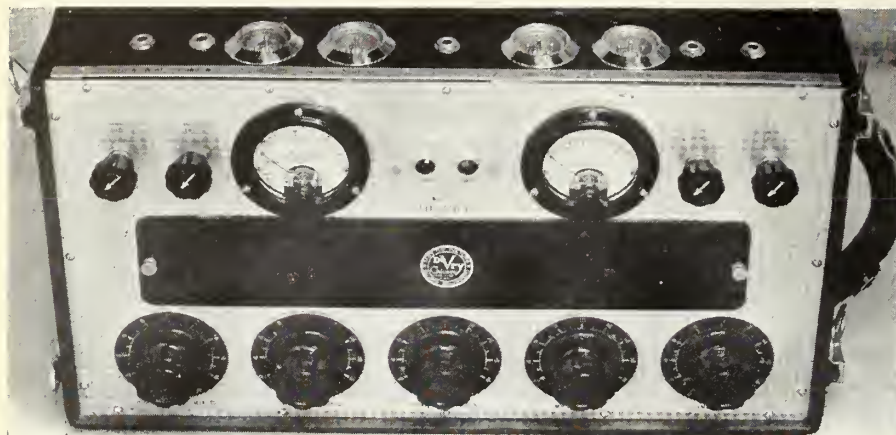
As this shot from the current Columbia Pictures Corporation production illustrates, it is easy to put "sparkle" into a scene with equipment using G-E MAZDA lamps. It is compact, convenient, and adequate for the job.

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Ready Playback Recordings

Many advantages in instantaneous checkups during production bring wider use of improved quality discs; one director uses it as a regular "dialogue insurance."

Several studios have for some time used instantaneous playback disc recordings for synchronizing prescored sound with the action on the set. These recordings also are used as instantaneous tests of sound quality although only recently have results been good enough to give accurate quality tests.

One director in a major studio uses instantaneous disc playback of all important dialogue and has found it valuable to experiment with minor changes in the dialogue as he goes along. While

meddling with the script is frowned on in many studios, nevertheless in this particular case it has worked out as a very practical idea.

During the last six months, however, instantaneous disc recording technique has been greatly refined. Better portable turntables, almost entirely free from "Wows"; better cutting heads and cutting styli have had a great deal to do with this improvement in volume and frequency range.

But the most important advances have

OFF TO CHINA is Norman Alley, shown above with the new DeVry 35 mm. sound camera. Alley, with the Universal reel, Eric Mayell, 20th-Fox, and Earl Nelson and Joe Rucker of Paramount, are IATSE newsreel photographers who headed for the Sino-Japanese war center last month. Mayell landed on front pages throughout the world late in September, when an automobile in which he was riding with other photographers was bombed and machinegunned by a Japanese plane. At left above is the sound panel of the DeVry outfit.

been in disc materials with cellulose nitrate coated discs nearly replacing the older cellulose acetate aluminum coated discs. A wide variety of good discs now is available at low cost and one of the newest high quality discs uses a cellulose coated glass disc in a successful attempt to reduce the ground noise.

The results to be expected from the newer 33 and 78 rpm lateral cut instantaneous recording channels are about as follows:

Frequency response: flat to two decibels from 40 to 8,000 cycles.


Volume range between ground noise and five per cent amplitude distortion, about 40 decibels over the spectrum.

It must be understood that, due to the disc and cutter characteristics, pre-distortion of the frequency characteristic in the recording channel is necessary, which naturally necessitates conjugate equalization of the playback channel so that the combined overall frequency response becomes flat.

While only hardy optimists contend that lateral cut recordings can give as good quality as good vertical cut, or "hill and dale" recordings, nevertheless modern lateral cut quality is nearly as good as average sound on film quality and the instantaneous playback feature is very worth while in the time it saves.

Incidentally, many of the newer instantaneous recordings can be played back as many as fifty times, using a modern pick-up, without measurable loss of high frequency response and with only a small increase in ground noise.

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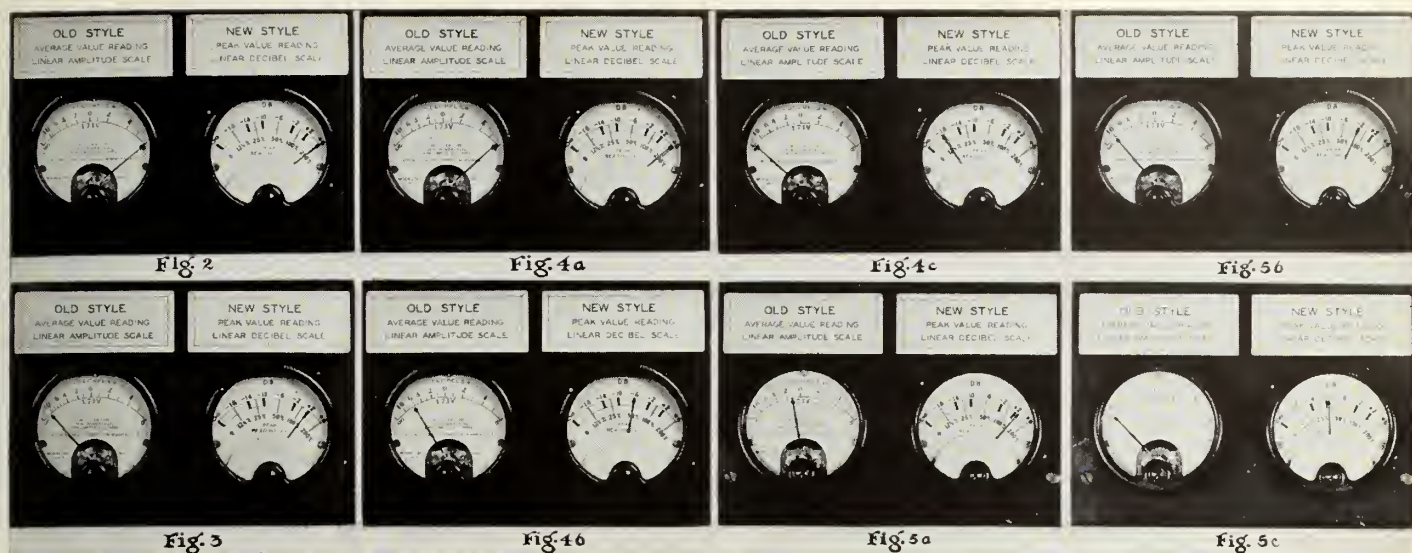
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FIGURES 2 TO 5 are reproductions from a motion picture film of the old and new meters in action on the same signal. The two meters were adjusted to the same sensitivity, so that with a pure tone, both will indicate 100% scale deflection. FIGURE 2 illustrated the response with a pure tone of plus 6 db level. FIGURE 3 illustrates the responses with a level of plus 2 db, by the peak reading meter to a buzzer tone,

which had a large peak factor. The deficiency of the old type indicator is very apparent. FIGURES 4A, 4B, 4C, illustrate the response to a pure tone at levels of plus 6, -6 and -18 respectively. The inadequacy of the old meter to cover this range is quite apparent. FIGURES 5A, 5B, AND 5C, illustrate random instances during speech recording. The slow return of the new meter makes it more easily read.

stantaneous records can be processed and duplicated in any desired quantity using normal phonograph record and broadcast transcription technique. Although there is considerable debate in technical circles as to whether the results are comparable with using the old soft wax master disc, there is no question but that modern instantaneous disc recording is very good, from the standpoint of quality and low cost.

J. N. A. HAWKINS, Local 695, IATSE

Albin Indicator

Much more accurate readings obtainable by mixers using new device developed on United Artists lot.

Sound recording mixers all are familiar with the shortcomings of the usual volume indicator, as pointed out by J. N. A. Hawkins, member of Local 695, IATSE, in the September issue of *International Photographer*. They frequently experience overloads when the indicator says the level is within safe limits. For low levels, it is common practice because the volume indicator readings are so low, to completely disregard them and to judge levels by the monitor.

Effective remedying of this situation is promised in the new volume indicator circuit, devised by Fred Albin of the United Artists sound department.

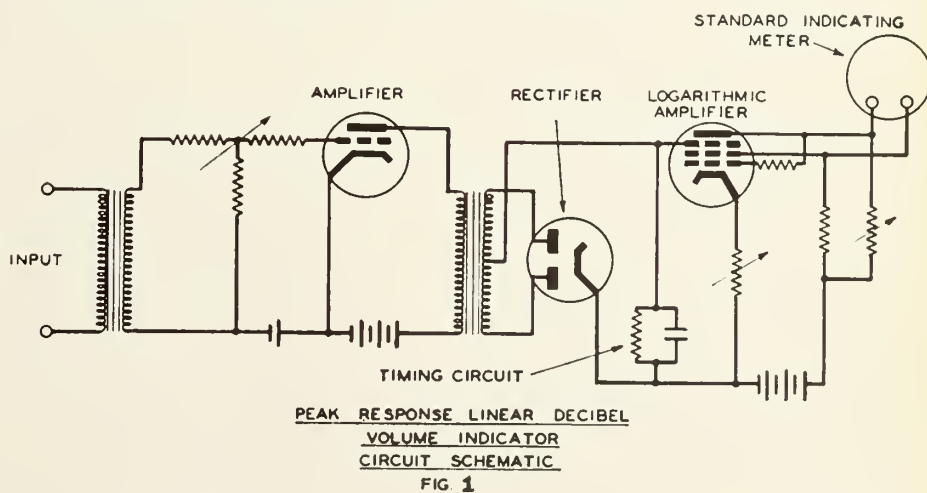
The new indicator system combines the points of merit usually considered essential: (1) high speed meter action; (2) peak response; (3) linear decibel

scale. It provoked considerable interest at the SMPE convention in Hollywood this summer and is being used successfully at United Artists.

In operation the meter responds rapidly—but being critically damped—does not overload the ultimate indication. The critical damping is equal over the complete scale. Also the indication is closely proportional to the peak amplitude of a complex wave. In this respect, the new indicator differs from the ordinary volume indicator which responds to the average value of a complex wave. Since the recording modulator responds to the peaks, it is essential that the volume indicator indicate the amplitudes of the peaks in order

to limit them to the overload level of the modulator.

The meter deflection is proportional to the log of the amplitude of the volume (voltage). In the ordinary indicator, the deflection is directly proportional to the amplitude. Thus the range of level which the Albin meter will indicate is considerably increased. The linear decibel scale has the same advantage over the linear amplitude scale that the linear decibel mixer attenuator has over the older linear resistance potentiometer. With the method used for producing the linear decibel response, there is no sacrifice of damping as there is with the shaped pole-piece method.



The circuit schematic illustrated by Figure 1 has omitted non-essential details of the circuit. The circuit is composed of a conventional amplifier, a rectifier with timing circuit, and a direct coupled amplifier stage. The meter is connected to the tube by a resistance network which balances out the no-signal current from the meter, and enables the meter to indicate only the change in current caused by the signal. This current is closely proportional to the log of the signal voltage impressed upon the input of the direct-coupled stage. The timing circuit accumulates a voltage closely equal to the peak value of the signal wave. At the same time, it is responsible for a slow return of the meter after cessation of the signal, and thereby gives time for the eye to register the indication.

Projection

Standard Change

Academy Research Council Proposes Revision of Standard Projector Aperture to fit present needs.

Seeking closer coordination of studio and theater practice and a change to suit developments in composite title, special effects and process photography during the past five years, the Academy Research Council is recommending a new revision of the Standard Projector Aperture, first adopted in 1932. The proposal is the result of a series of detailed tests by an ARC committee consisting of:

Grover Laube, Chairman; John Aalberg, Sidney Burton, Frank Cahill, Wallace Castle, Merle Chamberlain, C. Roy Hunter, Ray June, E. A. McClintock, Arthur Miller, Virgil Miller, Thomas Moulton, Emil Oster, Harry Rubin, William Rudolph, Herb Starkey, Homer G. Tasker, and Ray Wilkinson.

Main difference from that in use at the present time is by a .015" increased height and .021" increased width, and the proposed standard aperture is centered over the camera aperture.

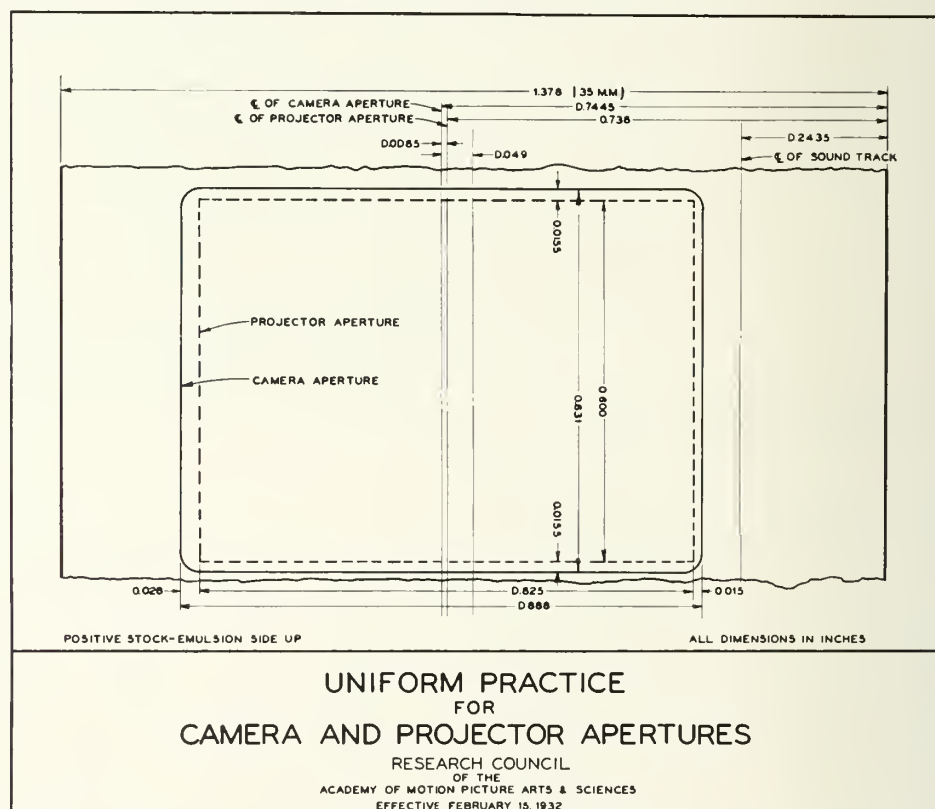
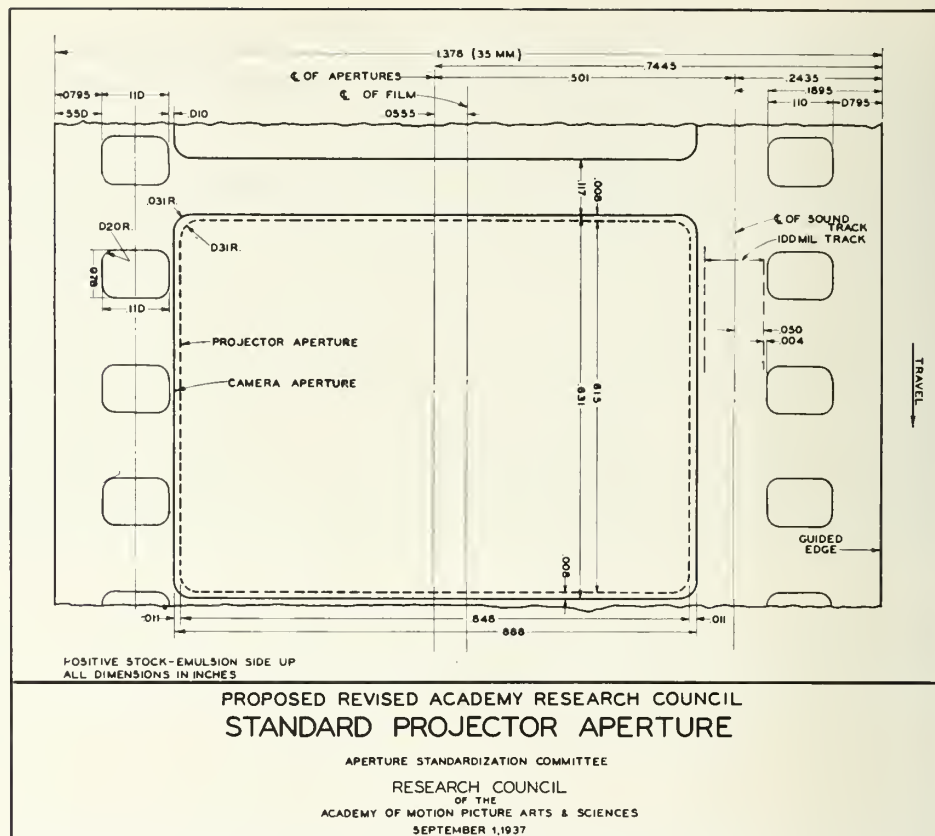
The limited framing tolerance, it is argued, will be advantageous in the theatre in that the possibilities for cutting heads and feet off the screen will be decreased, since more of the scene actually photographed will appear on the screen of all theatres.

The top accompanying drawing shows the proposed new revised standard projector aperture, while the bottom drawing gives the dimensions and position of the present Academy standard camera and projector aperture.

It is proposed that the dimensions and position of the Camera Aperture will remain unchanged, revisions in only the Projector Aperture Standard now being under consideration.

The size of the Standard Projector Aperture would be increased from 0.600" x 0.825" to 0.615" x 0.846" and the aperture itself would be recentered to a position so that center lines of both camera and projector apertures will be identical, half of the 22 mil difference in the widths of the two apertures being equally divided on both sides of the center line and half of the 16 mil difference in the heights of the two apertures again being equally divided on both sides of the horizontal center line.

This thus moves the proposed projector aperture 6½ mils farther away from the sound track. The four corners of the proposed sound projector aperture are rounded, with the same radius as that of the camera aperture, which is 31 mils.



New Models Due

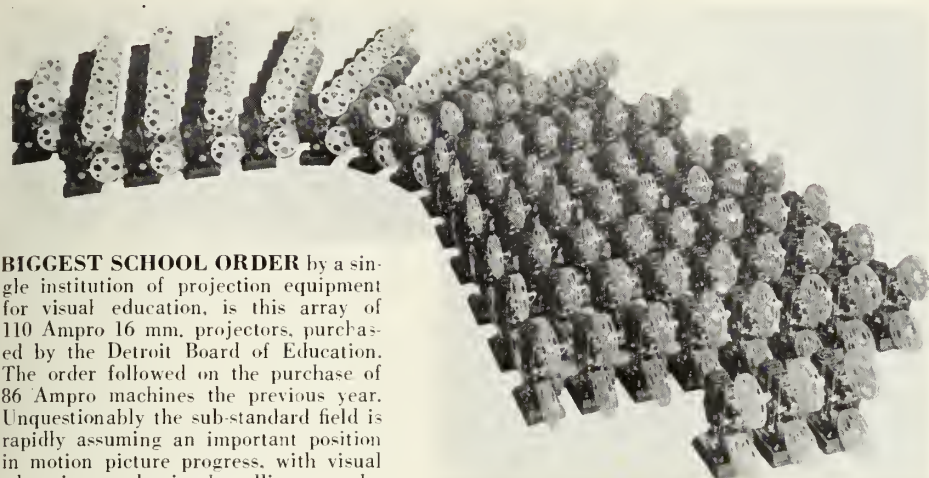
Long Beach projectionists readying carbon saver and animated effects machine for early marketing.

Two members of the Long Beach, California, Local 521, IATSE are busy with plans for putting out new and improved models of projection room devices that already have been in use for

some time successfully. One article is a carbon saver, the other an animated effects machine.

The carbon saver was perfected and marketed by Kenneth Reynolds and now is used quite a bit throughout the west in Fearless Magnarcs. The new model will be available within a few weeks.

There has been considerable interest in novel effects, particularly end-traveler stunts, since last month's article in International Photographer about the



BIGGEST SCHOOL ORDER by a single institution of projection equipment for visual education, is this array of 110 Ampro 16 mm. projectors, purchased by the Detroit Board of Education. The order followed on the purchase of 86 Ampro machines the previous year. Unquestionably the sub-standard field is rapidly assuming an important position in motion picture progress, with visual education and visual selling as the spearheads.

work of Ed Olsen and other members of Local 150, IATSE, in Warner Brothers' Hollywood and Southern California theaters.

Richard Mobarri of the Long Beach local has been putting out an animated effects machine, which can operate from virtually any light source from ordinary spots to the Bernograph and he now intends to put out a new and better model, full details of which will be announced this month. The Mobarri ma-

chine fits in very handily for the use of the economical slide effects described last month.

Ambassador

Giroux joins Technicolor; will visit theatre men, projectionists in interest of color films.

The Technicolor company, which started an educational campaign of sug-

gestions to exhibitors and projectionists with "Garden of Allah" on ways to improve and perfect the showings of Technicolor productions, with particular emphasis on house lighting and other technical aspects of projection, now has added George R. Giroux to its organization as field representative in charge of this work. Giroux is a veteran of film selling, and for the past four years was with RKO-Radio.

Giroux will travel the whole country, visiting theatre men and projectionists in the interest of color productions. His work will be of particular interest at this time with over 30 Technicolor features slated for release on the 1937-38 programs, plus several dozen color shorts.

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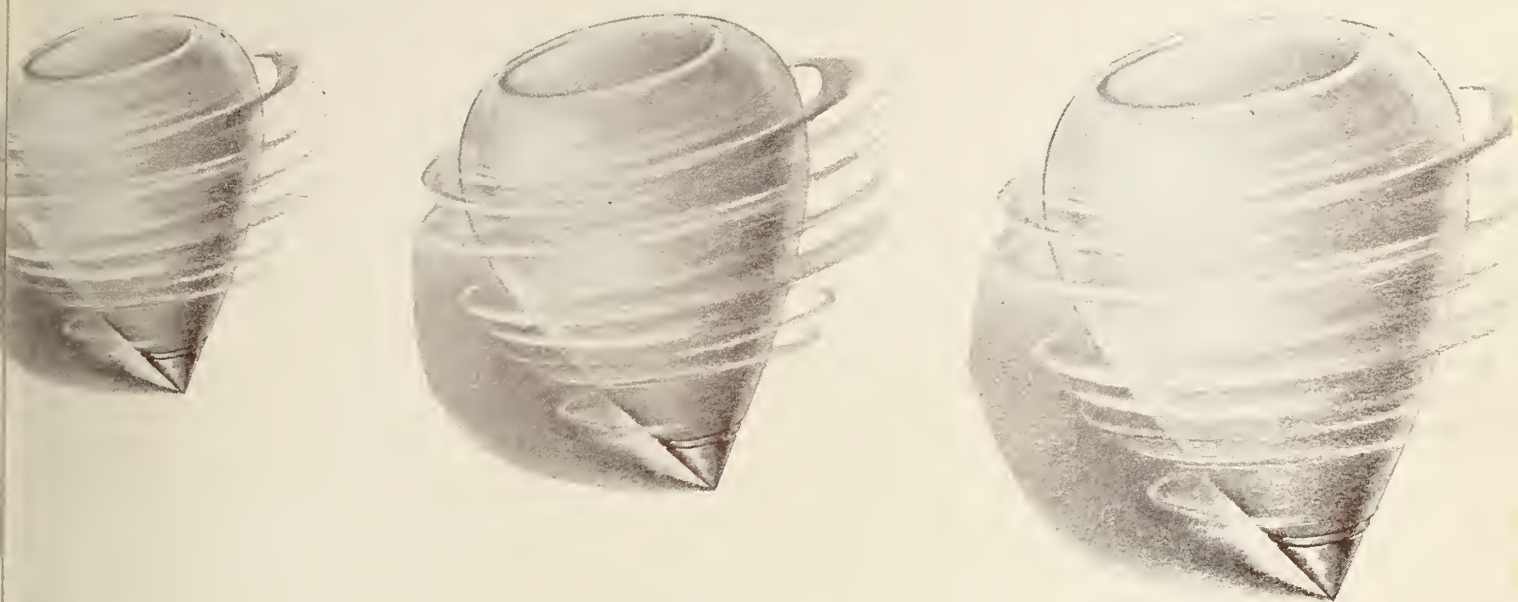
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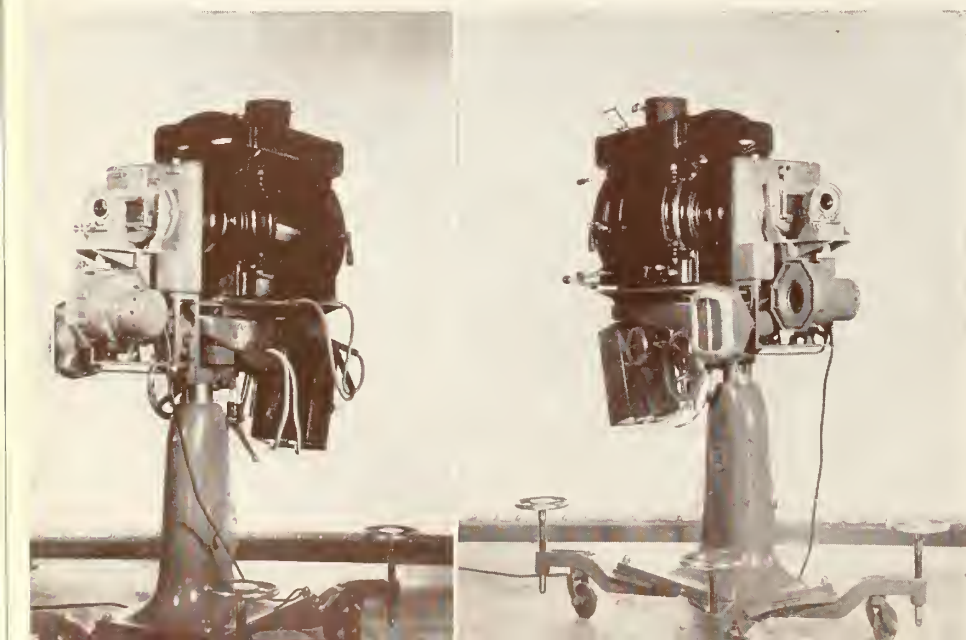
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International PHOTOGRAPHER

Vol. 9

A JOURNAL OF MOTION PICTURE ARTS AND CRAFTS
Hollywood, California

No. 1



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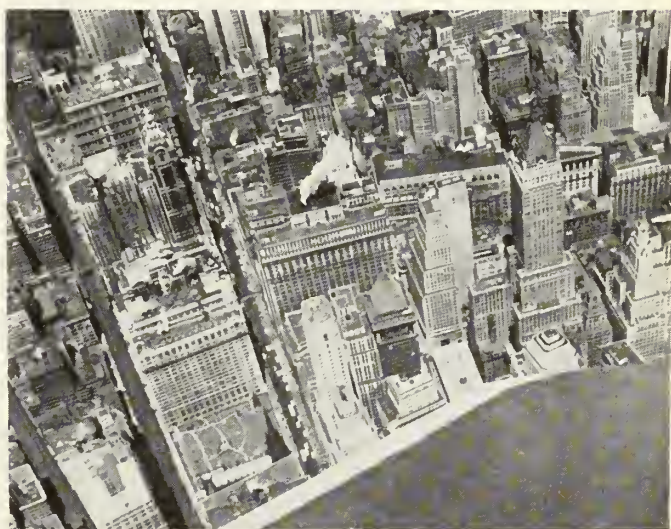
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Technicolor Takes the Air

New York photographed from the air in Technicolor three color for first time by Will Cline in Paul Mantz plane for Selznick International.



Continued progress in extending the flexible possibilities of Technicolor is evidenced by the recent trip made by Will Cline, Local 659, IATSE, and Paul Mantz, veteran Hollywood flyer, to obtain air shots of New York to be used in a special montage sequence in Selznick International's "Nothing Sacred." Aerial shots of lower Manhattan shown here were snapped by Cline with a Leica. At middle right Cline is seen getting scenes in three-color of a still

worker nonchalantly reading his paper while eating lunch 80 stories above street level at the top of the Empire State Building.

Middle left shows Cline in action while photographing a Lockheed, the "Morning Star," in flight. Al Cline was his assistant. To photograph scenes of this type, the Technicolor camera was mounted on a regulation machine gun mount, because of the latter's unusual

solidity and adaptability to being rotated without unusual force during flight. An interesting angle is illustrated at top left, as cameraman points his instrument straight back to cut down wind resistance and act as a rudder during the take-off.

Cline also photographed aerial scenes for Warner's "God's Country and the Woman," while Mantz now is busy working on Paramount's spectacular Technicolor feature, "Men with Wings."

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Close-ups**New Photographer Services**

With the current issue International Photographer starts two new services, the extension of the book of tables idea to two new fields. In the Laboratory Section will be found the first of D. K. Allison's lab tables and in the Sound Section will be found the first of J. N. A. Hawkins's sound tables.

Allison's Lab Series

Mr. Allison is a well-known consulting and research chemist and a contributing editor of International Photographer for many months. He is the author of the authoritative series on pH control, which appeared in the April, May and June issues of International Photographer.

Hawkins' Sound Series

Mr. Hawkins is a Stanford graduate who spent a number of years in radio before taking up motion picture sound work. He is a member of Local 695, IATSE, and a contributing editor of International Photographer. During several years as technical editor of the magazine, Radio, Hawkins co-authored the first edition of the Radio Handbook which has reached a sale of more than 50,000 copies among radio technicians.

Second Edition Soon

These two experts join Fred Westberg, veteran member of Local 659, IATSE, whose Cinematographer's Book of Tables has already sold over 3000 copies in the first edition and now is in the process of being revised and enlarged for a second edition to be published early next year.

Teague and Process

We have had a number of queries as to whether we have forgotten about our announcement of a series of articles on the history and technique of process and projection background by George Teague, one of the outstanding pioneer developers of this important adjunct to modern motion picture making. We certainly have not. Mr. Teague has been busy in the throes of expanding his organization and of getting his new still picture background devices ready for the market. This activity has thwarted his literary efforts but we are now in the process of going through hundreds of exclusive and rare pictures—for some of which only the negatives are available—which will be used to illustrate this series, which will start in an early issue.

International PHOTOGRAPHER

A JOURNAL OF MOTION PICTURE ARTS and CRAFTS

Vol. 9

Hollywood, November, 1937

No. 10

Contents

ON THE COVER. Irene Dunne and Cary Grant, stars of Columbia's "The Awful Truth," outstanding among the past month's previews, in a shot by Whitey Schafer, Local 659, IATSE, which is unusual in that it's an action picture made with an "eight-by-ten" with flash bulbs. Turn to Pages 16-17 for picture layout on this month's "Big Picture."

CLOSE-UPS	2-3
TRADEWINDS	5-6-7-8-9-10-11
The SMPE Fall Convention	
CAMERA	1-12-13-14-15-16-17-18
New Kalart Flash	
Agfa's Speed Press Films	
Over Correction	
More Kodak Cases	
Cinematographer's Book of Tables—Westerberg	
BIG PICTURE	16-17
Columbia's "The Awful Truth"	
SOUND	19-20
Canady Sound in College Research	
T and H Pads	
Soundman's Book of Tables—Hawkins	
LABORATORY	21-22
Blue Iron Toning	
Laboratory Book of Tables—Allison	
LIGHTING	21-22-23
Intelligent Color Lighting Vital	
PROPS-COSTUMES	24-25-26
Modern Backlot Magicians	
PROJECTION	27-28-29-30
Flo-lite Continuous Projector	
Academy-SMPE Dispute	
NEW PATENTS	31
CLASSIFIED DIRECTORY	31-32

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International Photographer, as the monthly official publication of International Photographers, Local 659, of the International Alliance of Theatrical Stage Employees and Moving Picture Machine Operators of the United States and Canada, not only represents the entire personnel of photographers engaged in professional production of motion pictures in the United States and Canada, but also serves technicians in the studios and theatres, who are members of the International Alliance, as well as executives and creative artists of the production community and executives and engineers of the manufacturing organizations serving the motion picture industry. International Photographer assumes no responsibility for the return of unsolicited manuscripts or material.

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Manufacturer Cooperation

We notice that it is quite a fad by some writers, when referring to the technical foundations of the motion picture industry, to refer sadly and patronizingly to Hollywood as being dependent upon sources located elsewhere for the development and improvement of its technical phases. There was a time when this was true but it has long since passed. Today a corps of specialists on every line of engineering related to motion pictures is active in Hollywood, developing and proving new materials and ideas, which filter out from Hollywood to every production center in the world.

Many of these specialized technical men are on the payrolls of the studios, and a large and important group are the contact engineers of firms supplying the industry with technical products. These men work in close harmony and cooperation with the studio executives and department heads. Today the big manufacturers may plan their products for broad general uses, but when it comes to motion pictures, the unusual requirements demand that the manufacturer bend his efforts to satisfy the motion picture industry's special needs.

In our December issue we will present a feature story about these experts and the many firms and phases of production they represent. In other words, "names, numbers and pictures of all the players" in a game that is played with the goal—the finest picture possible on the screens of the world's motion picture houses.

SPME and Academy

On page 27 is the story of the current SMPE-Academy dispute over standard aperture revision. If both factions are sincerely interested in improving film quality on theatre screens they should immediately discard their pouting tactics and decide to "play ball" together.

The simplest way would be through the setting up of two small committees which would strive for a cooperative solution of the situation. And for that purpose the facilities of International Photographer and the cooperation of IATSE men in both studios and theaters are sincerely offered, and we welcome any constructive viewpoints on the matter for publication in these pages.

Patents, Copyrights, Etc.

Another familiar name in International Photographer is that of Robert W. Fulwider, Los Angeles patent attorney. With this issue Mr. Fulwider resumes his monthly selections and digests of U. S. patents of interest to readers of International Photographer in conjunction with notes and comment on copyrights and litigation.

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International PHOTOGRAPHER

A JOURNAL OF MOTION PICTURE ARTS AND CRAFTS

Vol. 9

No. 10

Tradewinds

SMPE Marks Year of Progress

Fall Convention of Engineering Society points up strides made during 1937 in refinements and new developments on the technical front; disputes Academy aperture plan.

The remarkable progress in refinements and new developments in the technical end of motion pictures and allied crafts during 1937 was crystallized and dramatized effectively at last month's convention of the Society of Motion Picture Engineers at the Hotel Pennsylvania in New York. The year just coming to a close has been a brilliant one and undoubtedly will produce more potential candidates for Academy awards and similar honors than any since the depression period began.

Television, stereophonic recording, tri-dimensional films, outstanding new ideas and methods in sound, laboratory and projection practice, as well as application of air conditioning on a scientific scale grabbed most attention. Color, which highlighted the SMPE June convention in Hollywood, was not much exploited, nor was photography either. However, these two important elements of motion picture making made great strides in their practical application during the intervening months, although the SMPE session brought out few startling new technical developments along these lines.

The latter progress is evidenced by the wide improvement in color photography which has quadrupled its percentage position in current production schedules, both for features and shorts. Black-and-white also has made sensational strides, as is evidenced by the fact that from a photographic standpoint, many "B" pictures of today are far superior to the Academy award winners of but a few years ago.

For the first time in some years a distinct note of controversy bobbed up at the convention, when the SMPE projection practice committee took sharp

issue with the Academy Research Council upon the details of the latter organization's proposed revision of the Standard Aperture (Int. Photog., Oct., 1937). Both sides of this question are presented in this issue in the Projection Section.

Following is a digest of a majority of the papers presented at the convention:

Monday, October 11th

MORNING—BUSINESS AND GENERAL SESSION.

"Hunting with a Microphone the Songs of Vanishing Birds"; P. Kellogg, Laboratory of Ornithology, Cornell University, Ithaca, N. Y. (Demonstration) (30 Min.).

I.—A resume of the idea behind recording bird songs is presented. Includes a brief discussion of usefulness of bird song studies to students of ornithology; present methods of recording songs and early attempts at phonographic recording.

II.—Recording bird songs at Cornell is described. Includes the first recordings in co-operation with the Fox Case Corporation and subsequent work with A. R. Brand.

III.—Problems in recording bird songs in the wild. The high frequencies of bird song; necessity of working at relatively great distances from the subject; wind and other noises; need for portability and simplicity of equipment, all combine to increase difficulties of the work. Solution of these problems has been partly accomplished, and methods are discussed, including advantages and faults of parabolic concentrators.

IV.—Demonstration reel illustrating experiences encountered in studying the rare ivory-billed woodpecker in the swamps of Louisiana, together with picture and sound studies of the bird.

"High-Speed Motion Picture Photography Applied to the Design of Telephone Apparatus"; W. Herriott, Bell Telephone Laboratories, Inc., New York, N. Y. (Demonstration) (20 Min.).

High speed motion pictures are employed at Bell Telephone Laboratories as a visual aid in the study of problems associated with design, manufacture and testing of telephone appa-



TOP. Edward Washburn Kellogg, of RCA, recipient of the SMPE Progress Medal Award for 1937 in recognition of his outstanding achievements in motion picture technique. **BOTTOM.** Dr. Dean Brewster Judd, Senior Physicist in Optics of the National Bureau of Standards, Washington, D. C., recipient of the SMPE Journal Award for the best technical paper published during 1937. Awards were made at the Fall Convention annual banquet in New York last month.



SOCIETY OF MOTION PICTURE ENGINEERS
FALL 1937 CONVENTION
HOTEL PENNSYLVANIA

ratus. A new high speed camera of the optical compensator type operating at 4,000 pictures per second is described and its application to the study of problems associated with telephone apparatus is discussed.

AFTERNOON—PHOTOGRAPHIC AND LABORATORY SESSION.

"Further Progress in Film Storage"; Capt. J. G. Bradley, National Archives, Washington, D. C. (20 Min.).

Research has been continued along the lines indicated by previous tests reported at the Hollywood Convention (INTERNATIONAL PHOTOGRAPHER, June, 1937). It has been determined that the cascade type of storage cabinet has certain advantages and may be relied upon to satisfactorily control film fires in a cabinet having a capacity of ten reels.

A new method combining advantages of insulation and cooling agent, while retaining unit isolation features, is in process of development.

Stainless steel insulated cabinets are now installed at The National Archives, and slides showing the completed installation were shown.

"The Effect of the Composition of an MQ Developer on Its Reduction Potential"; R. M. Evans and W. T. Hanson, Jr., Kodak Research Laboratories, Rochester, N. Y. (20 Min.).

A short time ago it was found that reduction potential of a photographic developer solution could be measured electrochemically. The potential is read by dipping a platinum electrode into the solution and balancing the potential thus set up against a standard saturated calomel half cell by means of a poten-

tiometer. The addition of a potential mediator to the solution hastens the attainment of an equilibrium and greatly facilitates making the readings without affecting the final equilibrium.

This new tool of research has led to an extended study of the correlation between the photographic action of various developer solutions and compounds and the electrochemical reduction potential. Results are of great theoretical and practical interest. Knowledge of the reduction potential of a developer solution is, however, not at all sufficient to describe its photographic properties. Reasons for this are given and possible uses for the measurements in practice are discussed briefly.

In this paper the authors discuss MQ developers and effects of various constituents on their reduction potentials. Studies have been made on mixtures of elon and hydroquinone, as well as on the two components separately, with regard to the effect of pH, types of alkali present, concentration, sulfite and bromide and the presence of other reducing agents. Mixtures of elon and hydroquinone give a greater reduction potential than either alone, a maximum being reached when the mol ratio is approximately 1 elon to 3 hydroquinone. The results are easily explained on a physio-chemical basis. Photographic effects of the above variations now are being studied.

"A Modern Motion Picture Laboratory"; C. L. Lootens, Republic Productions, Inc., North Hollywood, Calif. (20 Min.).

This paper is a complete description of the new laboratory of Consolidated Film Industries, Inc., which was completed during the winter 1936-37. Included are layouts of and

pictures of equipment in the basement, first and second floors. Description of the laboratory and equipment follows the sequence of operation of negative development, "dailies," master and release printing, together with a description of the special printers, processing units, chemical system, silver recovery system and other mechanical items of interest.

"Modulated High-Frequency Recording as a Means of Determining Conditions for Optimum Processing"; J. O. Baker and D. H. Robinson, RCA Manufacturing Co., Inc., Camden, N. J. (20 Min.).

Quality of variable width sound records depends to a great extent upon image definition. Requirements, therefore, for a perfect sound track are complete transparency in the clear portion, complete opacity in the dark portions, an extremely sharp boundary between the clear and dark portions and exact duplication of the wave traced on the track by the galvanometer.

Distortion is introduced by any change in average transmission in recording of high frequency waves. At high densities the average transmission is reduced, and at very low densities the average transmission is increased by the presence of the high frequency waves. The average transmission is compared to the transmission through the film for a 50 per cent exposed track without signal.

It is possible, therefore, to find a density at which there is little if any change in average transmission and this density corresponds to most nearly perfect image definition and least distortion. On an original or negative recording, with the present commercial recording stocks, this density is ex-



tremely low, being in the order of 0.6 to 0.8. For the least amount of ground noise, the negative must be recorded at a much higher density. Change in the average transmission of the negative can be tolerated, since by the proper choice of print density, a condition of minimum distortion in the positive track can be obtained.

A modulated high frequency recording affords an extremely accurate method of determining correct negative and print densities for any given conditions of laboratory processing. An oscillator, designed for several carrier frequencies, is provided with a 400 cycle modulator for recording. The modulated carrier is recorded for several values of lamp current and processed to give a number of negative densities. Prints are then processed at various values of densities and the 400 cycle output measured on a suitable reproducing equipment. Combination of negative and print densities which gives the least amount of 400 cycle output indicates the condition for best image definition and the least amount of distortion. Care must be exercised in the design and construction of the oscillator to maintain the 400 cycle output to a minimum.

EVENING—BELL TELEPHONE LABORATORIES; SPECIAL SOUND SESSION.

"Distortion in the Reproduction of Hill-and-Dale Records"; M. J. Di Toro, Thomas A. Edison, Inc., Orange, N. J. (20 Min.).

In the reproduction of a hill and dale recording, the curve traced by the reproducer stylus differs from the recorded curve, with the consequent introduction of both frequency and

amplitude distortion. This distortion is called "tracing distortion" and must be tolerated only in virtue of the physical necessity of a finite tip radius for the reproducer stylus. Curves and formulae are given for the quantitative determination of the harmonic generation and decay in fundamental due to tracing distortion as functions of the amplitude and frequency of the recorded undulation, linear groove speed, and tip radius of the reproducer stylus. It is shown that for "constant velocity" recordings, when the minimum radius of curvature of the recorded undulation is at least equal to or larger than 5 times the tip radius of the reproducer stylus, the r. m. s. harmonic generation is a much more serious limitation upon the quality of the reproduction than is the decay of fundamental frequency, as, for example, in cases where the loss of fundamental is only 2 db., this harmonic generation is prohibitively high, being much greater than 10 per cent.

"Recent Developments in Hill-and-Dale Recorders"; L. Vieth and C. F. Wiebusch, Bell Telephone Laboratories, Inc., New York, N. Y. (Demonstration) (20 Min.).

A new sound on disc recorder has been developed in which is used the principle of feeding part of the output of the system back to the input of the associated driving amplifier in properly controlled relationship. Use of this principle—which is widely used in feedback amplifiers—replaces usual practice of providing dissipative elements for the control of an electrically driven vibrating system. Heretofore no practical application of feedback to electromechanical systems has been made, possibly because requirements for stable opera-

tion of such systems are difficult of achievement. Through recent developments these requirements have been satisfactorily met.

New recorder is capable of recording on wax or direct recording material without any effect on its characteristics which include a uniform response from 30 to 12,000 cycles and exceptional freedom from distortion products. Recorder is extremely simple and affords easy means for field calibration from the feedback element whose output is in direct proportion to the stylus velocity. These means also make available a monitoring voltage which, properly amplified, gives a precise aural picture of the stylus behavior during recording.

"Nomenclature and Specifications Including Description of the Various Types of Movietone Release"; J. K. Hilliard, Metro-Goldwyn-Mayer Studios, Culver City, Calif. (Demonstration) (25 Min.).

This paper includes a general description of the following types of movietone sound track which are currently being released or will be released in the immediate future, according to plans:

1. Standard movietone.
2. Standard movietone with squeeze—or matted—track.
3. Standard movietone with double-squeeze—or matted—track.
4. Movietone push-pull.
5. Movietone push-pull squeeze—or matted—track.
6. Variable area bilateral with bias.
7. Variable area bilateral with shutter.
8. Variable area unilateral bias track.
9. Variable area push-pull.

Pola Three Dimension Films

One of the forward-looking papers presented was that on "Three-Dimensional Motion Pictures," by George W. Wheelwright, III, of the Land-Wheelwright Laboratories, Inc., Boston, Mass. Abstract of the paper, which thoroughly discussed the subject, follows:

- I.—Historical background.
- II.—Requirements of true stereoscopy and discussion of factors involved:
 - a. Overlap.
 - b. Detail.
 - c. Diminution in size of known objects.
 - d. Haze.
 - e. Lighting effects.
 - f. Two-eye pictures taken eye-distance apart.
- III.—Serious three-dimensional work falls into two classes:
 - a. Critical angle stereoscopy.
 - b. Anaglyph stereoscopy.
 - 1.—Use of colors to obtain stereoscopic pictures. Lumiere's work, and Audio-scopies which have three disadvantages are examples.
 - 2.—Polarizing anaglyphs first operated by Anderton in 1893, and most recently through the use of Polaroid.
- IV.—Explanation of the advantages to be gained from three-dimensional pictures in color as opposed to single pictures using the same color system. Discussion of experimental evidence that the two-eye picture has real advantages.
- V.—Problems discussed:
 - a. Photographers need to learn:
 - 1.—Limitations.
 - 2.—Technique of using this new tool for three dimensions.
 - b. Theatre production problems.
 - 1.—Changes in method of projection.
 - 2.—Area of best viewing.
 - 3.—Distribution of glasses and their possible re-use.
- VI.—Thirty-five millimeter movies, full size, the "living movies of the future." Screen disappears; the actors, particularly in close-ups, appear to be present in person. The movies shown when considered in connection with present technical excellence will create final illusion of living movies.
- VII.—Use of a large area of Polaroid to explain the three fundamental principles of polarized light. Some of the new uses to which this will be put, and in particular, how the three-dimensional pictures are observed by the audience with the use of Polaroid.

During the past year all above tracks have been used to some extent in released movie-tone pictures. It is the purpose of this paper to show samples of these various types of tracks and give a general description of their characteristics. A description is also included of the general technique involved in the recording and reproducing of the so-called "hot and cold" or "A and B" prints. During the past two years this particular type of print has been used very successfully in extending the volume range of the variable density release to approximately 50 db. This release is intended to be shown only in theaters which have equipment adequate to reproduce music which is 6 to 10 db higher than average dialog.

A description of the mechanics and technique for re-recording, using the squeeze-track, is outlined. This procedure increases the noise reduction from 3 to 6 db, depending upon the amount of squeeze applied.

"Film Perforation and 96-Cycle Frequency Modulation in Sound-film Records"; J. Crabtree and W. Herriott, Bell Telephone Laboratories, Inc., New York, N. Y. (14 Min.).

When motion picture film is flexed around a cylinder, the film in the region of the sprocket holes does not follow a smooth curve. In a sound record this leads to frequency distortion of perforation frequency.

Tuesday, October 12th

MORNING—ENGINEERING PRACTICE SESSION.

"Air-Conditioning with Lithium Chloride"; G. A. Kelley, Surface Combustion Corp., Toledo, Ohio (20 Min.).

Describes a system of air conditioning which employs lithium chloride for independently controlling both relative humidity and dry bulb temperature of air. It is used both for comfort air conditioning and for treating air for industrial processing work.

Lithium chloride is one of the most hygroscopic of inorganic compounds and the aqueous

solution has the property of absorbing moisture from, or adding moisture to, the air, depending upon the vapor pressure difference between the air and the solution. From this it is seen that by properly controlling concentration and temperature lithium chloride solution is capable of either dehumidifying or humidifying the air, depending upon requirements. The air is cooled or warmed when passed over an aqueous solution of lithium chloride, depending upon whether the solution is cooler or warmer than the air. Further cooling or warming of the air when desired is obtained by using an after-cooling or after-heating coil.

Application of this system of air conditioning to a typical problem of interest to motion picture engineers is discussed and illustrated by means of a schematic flow diagram. Operating data for full load and for less than full load conditions show low cost of operation and efficiencies equally as high when operating either at maximum load or at less than maximum load.

Washing, deodorizing and neutralizing of bacteria from the air by contact with lithium chloride are important factors where pure, clean air is desired.

"The Activated Alumina System as Applied to Air-Conditioning and Drying Problems"; G. L. Simpson, Pittsburgh Electro-dryer Corp., Pittsburgh, Pa. (20 Min.).

The phenomenon of adsorption is discussed. Some of the properties of the solid adsorbent, Activated Alumina, are given.

A dynamic characteristic curve of this adsorbent is included. This dynamic characteristic is utilized industrially to dry air and gases to dewpoints as low as minus 76 degrees C. (.0004 grains per cubic foot; .0009 milligrams per liter).

Apparatus utilizing Activated Alumina in this way is described and pictured.

Uses include drying of controlled atmos-

pheres, bottled gases and in chemical processing when water vapor would promote corrosion or adversely affect the process. Compressed air lines are kept free of water to prevent freeze-up in winter or spoilage of work.

In industrial and comfort air conditioning, comparatively large quantities of partially dried air are required. A continuous dehumidifier to meet these requirements is described and pictured.

It is pointed out that performance is a function of machine design as well as of the fundamental characteristics of the solid adsorbent used. Depending upon factors of first cost and economy of operation, a wide range of characteristic performance may be obtained. A curve shows the present-day characteristic of a line of machines that is commercially available.

The humidity in storage rooms and processing departments may be reduced by installation of one of these machines without auxiliary equipment. Combined with cooling and circulation, these dehumidifiers may be used effectively in summer air conditioning installations in industrial and comfort applications.

In the manufacture of film base, water vapor may be deposited in the material by cooling due to solvent evaporation. This is avoided by using dehumidified air in the process.

Some substances cannot be heated much above room temperature without damage. Humid summer air has too high an absolute humidity to accomplish satisfactory drying without raising the temperature beyond this limit. Dehumidified air fed to drying cabinets or tray dryers solves this problem. Uniformity of drying conditions may also be obtained by controllably dehumidifying the input air to drying systems.

"Die Castings and Their Application to Photographic Appliances"; C. Pack, Doehler Die Casting Co., New York, N. Y. (20 Min.).

Die castings are defined as castings made by forcing molten metal into a metallic mold or die. The alloy most generally used is of the zinc base type, having a tensile strength of approximately 40,000 lbs. per sq. inch. For photographic appliances, the alloys of lower specific gravity are more desirable. Aluminum base alloys are used more extensively in photographic appliances for that reason. Physical properties of various aluminum die casting alloys are given.

Since low specific gravity is of prime importance in castings used for photographic appliances, development of the process of die casting the lightest of all commercial metals, magnesium, is of particular interest to the motion picture industry. Magnesium is one-third lighter than aluminum, and magnesium die castings are now being used wherever light weight is important. Physical properties of magnesium die castings are given.

Reference is also made to the die casting of brass and German silver, recently developed. Examples of die castings used in the construction of photographic appliances were used to illustrate the subject-matter of the paper.

"The Use of Inconel for Photographic Film Processing Equipment"; G. L. Cox, International Nickel Co., Inc., New York, N. Y. (20 Min.).

The general corrosion resistance of inconel, making it useful in film processing, is discussed. Typical applications with significant service data are given. Especial reference is made to the outstanding usefulness of inconel in the preparation of the sensitized plate, fixing, toning, intensification, and reduction operations. Well established uses of nickel and monel for developing operations are briefly discussed.

"Newer Types of Stainless Steel and Their Applications to Photographic Processing Equipment"; H. A. Smith, Republic Steel Corp., Massillon, Ohio (20 Min.).

Within the last three years, two new types

of stainless steel have been developed, type 315 which contains approximately 18% chromium, 8% nickel, 1.5% copper and 1.5% molybdenum, and a modification of type 316 (the usual 18-8 Mo) where the molybdenum content has been raised to from 3% to 4% molybdenum. Considerable test data are now available for type 329, containing approximately 27% chromium, 4.5% nickel and 1.5% molybdenum. This latter steel shows promise in that pit corrosion tendency is considerably reduced. Satisfactory welds may also be made on this type. From the corrosion resisting standpoint, three other compositions are discussed, type 309, 24% chromium, 13% nickel; type 310, 25% chromium, 20% nickel, and type 446, 27% chromium.

It is pointed out that a polished (No. 6) and a finely ground (No. 4) finish are more corrosion resistant than a pickled finish not only from the potential standpoint but due to the decreased possibility of these former (No. 4 and No. 6) surfaces collecting foreign matter that accelerates corrosive attack.

"Vacuum-Tube Engineering for Motion Pictures"; L. C. Hollands and A. M. Glover, RCA Manufacturing Co., Inc., Harrison, N. J. (25 Min.).

Describes manufacturing and developmental technique of vacuum tubes with particular reference to their use in motion picture equipment. A brief discussion of how application requirements affect the choice of materials, structural design, and electrical characteristics of phototubes and amplifiers of both power and voltage types is included. How tubes are designed to meet specific needs will be illustrated by actual examples taken from recent tube developments. Work on producing tubes having low-hum, low-microphonic and low-noise characteristics is given as of special interest to the motion picture engineer. The paper closes with recommendations on how to use vacuum tubes to best advantage.

AFTERNOON—LIGHTING AND STUDIO SESSION.

"Spectral Distribution and Color-Temperature of the Radiant Energy from Carbon Arcs Used in the Motion Picture Industry"; F. T. Bowditch and A. C. Downes, National Carbon Co., Inc., Cleveland, Ohio (20 Min.).

Color temperatures of various carbon arcs have been calculated from spectral energy data. The dominant wave-length and per cent purity of each arc are given with reference to both "average daylight" and "noon June sunlight." It is pointed out that the color temperatures of these carbon arc light sources are of value in comparing them on a visual basis only. The effects of the radiant energy from the arcs on any photosensitive medium other than the human eye, for example, photographic film, is very different from the visual impression. Spectral energy distribution curves of several carbon arc sources are published for the first time.

"Recent Developments in Gaseous Discharge Lamps"; S. Dushman, Research Laboratory, General Electric Co., Schenectady, N. Y. (20 Min.).

Describes the luminous and electrical characteristics of a number of vapor discharge lamps which have attained practical importance in recent years. These include the sodium vapor lamp, the high intensity mercury vapor lamp, and the high pressure quartz capillary lamp. The fundamental physical phenomena are discussed briefly and the manner in which these affect the light output and efficiency. The effect of variations in gas pressure and current density on the distribution of intensity in the spectrum is dealt with, and also the accompanying changes in intrinsic brilliancy and color of light emitted. Latter part of the paper discusses recent developments in utilization of fluorescent materials in gaseous discharge lamps. These lamps offer interesting possibilities from the point of view of general illumination and special color ef-

Stereophonic Sound Ready

Stereophonic or three-dimensional sound, predicted exclusively in INTERNATIONAL PHOTOGRAPHER by J. N. A. Hawkins in a copyrighted article published August, 1937, was demonstrated as ready for practical use at last month's SMPE Fall Convention. The demonstration was given at the Bell Telephone Laboratories by J. P. Maxfield of ERPI, which has been working with the Bell organization on the new type sound.

A ping pong game was shown on the screen and the sound of the bouncing ball followed the exact path of the ball itself. So accurate was the "sound path" of the ball as it traveled from one side of the net to the other, it was easily possible to close the eyes and tell at any instant which side of the net the ball happened to hit. At one point of the game, the player missed the ball and it bounced off the table and disappeared behind the player. Sound of the bouncing ball likewise went to the floor and appeared to recede beyond the line of vision on the screen.

"In present-day talking pictures, we obtain only an illusion of sound coming from the point of origin on the screen," Mr. Maxfield said. "Actually, it comes from a fixed point behind the center of the screen with no direction or space-relationship. If for instance we see someone playing a piano on the screen, our ears and our eyes tell us that the sound of the piano is coming from the keyboard of the piano because we see the pianist strike the keys. There is no effect of sound motion on the screen. Stereophonic recording and reproduction provides this sound motion or direction."

The reel of stereophonic recordings had a sequence in which a woman played a short piano selection, and the notes of the piano actually came from the strings behind the keyboard, and the distance between the bass and treble strings was easily "discerned." In another scene a large symphony orchestra played a Lohengrin number. Location of the choirs of individual musicians in the orchestra was easily discerned by the sound coming directly from each instrument.

A short skit was also presented which opened with a darkened screen. A clock was heard striking and the audience involuntarily looked to the right of the screen to see it. A telephone rang and the audience looked to opposite side to see it. When the lights came up revealing a living room set, clock and telephone were in the exact positions in which the audience had looked.

Maxfield's explanation of stereophonic is identical with the predictions published in INTERNATIONAL PHOTOGRAPHER, August issue.

"In ordinary talking pictures of today, sound is picked up with one microphone amplifier channel and recorded on only one sound track. The condition is actually similar to hearing with only one ear," Maxfield said, in explaining the new third-dimension sound. "In stereophonic talking pictures sound is picked up by two channels and the output of each is recorded on a separate sound track on the film. There are two separate sound tracks on the film, each of which is a recording of just one channel. In reproducing the two sound tracks in the theatre, the output of each track is fed to a separate set of loud speakers at the sides of the screen. The effect on the listener is that he is actually enjoying 'two-ear hearing' (binaural) instead of 'one-ear hearing'."

fects.

"Recent Developments in Background Projection"; G. G. Popovici, Bronx, N. Y. (20 Min.).

Complexity of the background projection process is generally known. It has been widely applied in cinematography with great success. A new field, still photography, offers a tremendous opportunity. Two types of such projectors are described, one to cover screens up to 10x12 feet, the other to cover screens up to 13x18 feet. During the research stage some very interesting facts have been observed. Following elements of the problem are discussed:

- (1) The spot condition, what causes it and how to reduce it successfully, even eliminating it entirely in specific cases.
- (2) Screen textures: Nitrate or acetate base sprayed with polarizing material for diffusion (Flatlight type). The new Trans-Lux screen of the high-transmission type.
- (3) Theory of light refraction through screen.
- (4) Light brightness vs. diffusion of screen.
- (5) Optical conditions, condensers, objective lenses, etc.
- (6) Light-source proper: Brightness vs. current, behavior of different types of carbons, spectral consideration in color projection.
- (7) Cooling the slides with air, a novel method incorporating refrigerated air for the super-projector.
- (8) Projector electrical, optical, air operating characteristics, including remote control of arc, douser, air cooling system.

"A Method of Enlarging the Visual Field

of the Motion Picture Screen"; B. Schlanger, New York, N. Y. (15 Min.).

A method of motion picture projection is developed to extend the light falling on the outer margins of the screen to a contiguous field surrounding the screen, thereby eliminating the present practice of a dark contrasting screen border, and creating an apparently larger screen and a more natural duplication of the visual function.

"Grading Projectionists"; G. P. Barber, Government of the Province of Alberta, Edmonton, Alberta, Canada (20 Min.).

This paper describes the new methods of licensing projectionists in the Province of Alberta. The process of becoming a first class projectionist requires a licensed apprenticeship of at least twelve months, followed by one year as third class and, later, one year as second class projectionist before taking final examination for a first class license. Each period, except apprenticeship, is preceded by a thorough examination.

"Cooperation as the Keynote of Successful Small Town Projection"; T. P. Hover, Warner's Ohio Theatre, Lima, Ohio (15 Min.).

At a recent meeting of the SMPE the chairman pointed out that engineers as a group are backward in dealing with problems involving the human element. They would rather deal with things than persons. They cannot be blamed for this attitude, however, because most engineering problems can be solved by definite formulae and procedure, while problems dealing with the human element seldom follow the expected path. This human element is a vital consideration in the successful operation of a theatre which

Standing Committee Reports

Three committees reported at the SMPE fall convention. Highlights of the Studio Lighting and Standards bodies are presented here, while the Projection Practice group's entry into controversy with the Academy Research Council over proposed revision of the Standard Aperture, is covered in a news story on Page 27 of this issue of International Photographer.

The Studio Lighting Committee, of which R. E. Farnham is chairman, reported that the past year has witnessed unusual advances in both studio lighting equipment and technique of lighting, second only to the famous 1928 period when the studios adopted incandescent lighting.

Cameramen now are entering an era of "precision" lighting. Highlights and shadows are carefully balanced with dimmers as well as the placement of the units. This calls for equipment giving more accurate light control. Also, influence of lighting for color is creating a greater appreciation on the part of cameramen of the color quality of the light in black-and-white photography.

The report also tells of the development of a satisfactory filter of extreme accuracy, making possible the use of incandescent lamps of the "CP" type for Technicolor photography, either alone or when mixed with other suitable illuminants.

The Report of the Standards Committee, of which E. K. Carver is chairman, made note that there have been but two meetings of the committee since the last report at the Spring convention.

During the summer, fourteen new drawings have been completed covering 8 mm. film standards, revision of the drawings for sprockets, and reels for 35 mm., 16 mm., and 8 mm. film, but only preliminary discussion of them has occurred. The Standards Committee also has given initial approval to the adoption of the spacing of 0.15 mm. separating the two halves of the push-pull sound track, but the balloting is not yet complete.

requires that sound and projection equipment be maintained in first class condition at all times.

It is the purpose of the author to present plans and ideas which have aided in maintaining a high standard of projection in his city. Since this city is over 150 miles from the nearest parts supply company, a well-planned system of mutual cooperation is of the greatest importance in order to prevent shut-downs with attendant loss of money and good will. The success of the plan over a period of ten years recommends it to consideration of other projectionists' organizations which are isolated from repair and emergency engineering facilities.

"A Discussion of Screen Image Dimensions"; F. H. Richardson, Quigley Publishing Co., Inc., New York, N. Y. (15 Min.).

A review of the objectionable faults, which exist in many motion picture theatres because of a lack of data on and understanding of the problem of the relation of the shape of a theatre auditorium to the size of the projected picture. A plea is made that the Society of Motion Picture Engineers secure more data on this problem and arrange for its distribution.

"Precision All-Metal Reflectors for Use with Projection Arcs"; C. E. Shultz, Heyer-Shultz, Inc., New York, N. Y. (10 Min.). Applications to Photographic Processing Equipment"; H. A. Smith, Republic Steel Corp., Massillon, Ohio (20 min.).

This paper deals with the peculiar characteristics of an all metal reflector regarding its resistance to tarnish, pitting, breakage and heat. A comparison is made between the present standard glass reflector and this new type as to reflectivity, dependability, accuracy, color response and longevity.

"Perforated Screens and Their Faults"; F. H. Richardson, Quigley Publishing Co., Inc., New York, N. Y. (10 Min.).

This paper discusses certain faults in perforated screens, particularly with relation to imperfection in perforations. It is prepared wholly to bring forth discussion with view of determining how far the faulty perforations, as illustrated by slides, may be injurious to sound results in theatres.

"Commercial 16-mm. Projection Faults"; C. L. Greene, Minneapolis, Minn. (15 Min.).

Because commercial motion pictures on 16 mm. film are an outgrowth of "home movies," the standards of projection are low. Less care is given to their proper presentation than is the case with theatrical showings of 35 mm. film, whereas, because of the greater overall magnification, more care should be given. Some of the more glaring faults are treated in some detail, a general treatment is set forth, and the importance of proper presentation is clarified by comparison of show-windows of the street and of the screen.

Thursday, October 14th

MORNING—APPARATUS SYMPOSIUM AND MANUFACTURERS' ANNOUNCEMENTS.

"The Sound-Level Meter in the Motion Picture Industry"; H. H. Scott, General Radio Co., Cambridge, Mass. (15 Min.).

The modern sound level meter may be used as a convenient means for making a large number of measurements of value to the motion picture industry. Recent designs featuring light weight, small size and convenience of control make modern sound level meters particularly well adapted for such purposes. Among many possible uses are: Measuring noise levels in studios and theatres; measuring noise made by ventilating equipment, cameras, or projection equipment; measuring background noise level from reproducing system; checking overall frequency response of reproducing system; checking variation in frequency response throughout auditorium; checking level of reproduction in auditorium, etc. Typical data is presented showing results obtained in a theatre.

"New Ideas in Mobile Sound Recording Equipment"; C. M. Ralph and J. G. Matthews, General Service Studios, Hollywood, Calif. (15 Min.).

An extensive rental service, in addition to the usual studio facilities, has created at General Service Studios, Inc., a demand for sound recording equipment, unusually broad in scope. Portability requirements range from portable "trunk" equipments to mobile recording and re-recording rooms having a high degree of comfort and convenience. Operating requirements impose the need for twenty-four-hour-per-day service, at times, from any one of a number of power sources. At the same time, in consideration of the rental aspect, simplicity and fool-proof operation were found to be essential.

Requirement for a mobile recording room has been met very economically and advantageously by the use of a cabin type trailer. (International Photographer, August, 1937,

Foreign Markets

"Safeguarding and Developing of our Film Markets Abroad" was discussed by N. D. Golden of the U. S. Department of Commerce Bureau of Foreign and Domestic Commerce, speaking at the SMPE Fall Convention. An abridgement of his paper follows:

American motion pictures are maintaining their immense popularity throughout the world, yet barriers and obstructions which tend to limit their sale continue to be imposed abroad. "Contingent" taxes and complex restrictions which continue to be slapped on in all too many instances in foreign markets are among problems American producers must face. Some of these are legitimate enough, from the standpoint of local interests, but others appear to be inherently unreasonable. In certain cases our motion-picture industry may be justified in taking a strong and positive stand with the object of bringing about the rectification of unfair measures. We need not be unduly hesitant. Our producers and distributors can afford to make effective their opposition to merely narrow-minded or punitive practices, while at the same time conforming readily to rational and moderate foreign requirements. In any such stand they will have the backing of one momentous factor—namely, the avidity of foreign audiences to see and hear our magnificently entertaining films.

Foreign markets play a highly significant role in the success of our industry. They must be constantly cherished and cultivated and energetically safeguarded. It is noted that any strong wave of nationalistic sentiment in Central Europe, finding expression in restrictive laws affecting motion pictures—or a movement toward control or rigid censorship somewhere in Asia—or some inimical reaction in a Latin American country—may contribute to an ultimate effect whereby motion-picture employees would find less in their pay-envelopes or might even be confronted by more severe emergencies.

The importance of the industry's exports is shown by the fact that from 30 to 40 percent of all revenues received by American motion picture producers for their products are derived from foreign markets.

Steady efforts of the Bureau of Foreign and Domestic Commerce to safeguard and augment American motion-picture markets by supplying a wealth of factual data and utilizing a variety of trade-promotive methods is covered in the paper presented. The bureau's motion-picture unit has recently been raised to full divisional rank, in recognition of the industry's importance. Such helps as it provides are especially vital at the present moment because, under the circumstances existing today, our motion-picture producers and distributors are apt to find themselves puzzled, entangled, or thwarted by the ever-growing intricacy of the conditions that they face abroad. Hence, their continued success in foreign markets depends upon the functioning of a reliable intelligence service.

ill.). Features of the equipment are: Complete operation from lot A.C. supply, dark room facilities, simplicity of operation, adequate storage space, comfort and appearance. The multiple-channel re-recording trailer is designed along similar lines and is a versatile unit which, with its signaling and remote control systems, permits its use with all other recording equipment to form a complete channel.

The requirements for all degrees of portability on location work have been excellently met by the adaptation of a portable recording channel to a two-ton, standard-body truck. From a utility standpoint this channel incorporates many design features which make its use highly desirable for this class of service. The recording console is standard with that of the recording trailer. An internal battery-motor-generator power supply allows three-day location operation without recharging. When available, three-phase alternating current allows full channel and motor system operation for any length of time desired. Channel operation is possible on single-phase alternating current. Three-phase motor systems expedite recording. The equipment is removable from the truck for extreme, "trunk" channel, portability. Changes from one recording condition to another are accomplished by one master switch.

"A Mobile Sound Recording Channel"; L. T. Goldsmith, Warner Brothers Pictures, Inc., Burbank, Calif. (15 Min.).

A location-truck recording channel is described that incorporates latest equipment and operating features. All the advantages and facilities of a fixed installation are retained in the unit without sacrificing its mobility or simplicity of operation.

The equipment used was built for Warner Bros. by the RCA Manufacturing Company. Recordings are of either the standard bilateral or push-pull variable-width type, and are made using ultra-violet light exposure of the film. High-quality circuits are used from microphones to the recording machine. Monitoring is accomplished with high-speed volume indicators and high-fidelity headphones.

Facilities are provided for operating the

portable mixer case either inside of the truck or remotely at distances up to 1,000 feet. A collapsible dural microphone pole is carried, and several wind and rain screens are provided to permit recording under adverse conditions.

"A Device for Cleaning the Sound-track of Motion Picture Film During Projection"; R. V. Fisher, Flower City Specialty Co., Rochester, N. Y. (Demonstration) (15 Min.).

A device for cleaning the sound track or zone on which sound is recorded. Comprises a compact attachment applicable to all existing projectors without alteration of projector mechanism. It is simple and sturdy in operation. Its object is to improve reproduction of recorded sound by removing completely all dirt, dust and lint that lodges on the sound track during the process of projection, re-winding and shipping.

"A Recorder for Making Buzz-Tracks"; E. W. Kellogg, RCA Manufacturing Co., Inc., Camden, N. J. (10 Min.).

Only requirement of a buzz track is that the track be of correct width and properly located with respect to edge of film nearest track, and that sound produced by a weave in one direction shall be readily distinguishable from that which results when film is displaced in the other direction. It is better that the buzz track film should be a direct recording rather than a print since there is less chance of inaccurate location. A simple recorder has been constructed for the sole purpose of making buzz track film. It can readily be converted for 16 mm. All possible precautions are taken to insure correct track width and location. In view of the small amount of huzz track required, it is assumed that only one such machine will be needed by a sound department.

AFTERNOON—SOUND SESSION.

"Recording Tests on Some Recent High-Resolution Experimental Emulsions"; J. O. Baker, RCA Manufacturing Co., Inc., Camden, N. J. (20 Min.).

The effect of, and conditions for, image definition in variable width sound recording are discussed in a separate paper. "Modu-

lated High Frequency Recording as a Means of Determining Conditions for Optimum Processing." Page 6, Column 3.) There it is shown that present commercial sound recording emulsions have least distortion at a very low density accompanied with an undesirable amount of ground noise if used as a positive.

A new experimental emulsion, Eastman Kodak Co. O-7461-1, differs from present emulsions in that it has extremely high resolution and minimum distortion at a density of approximately 1.5.

Speed of this emulsion is less than regular recording stocks, but since it is used with white light and no filter is required, sufficient densities are readily obtained with present optical systems. These characteristics offer possibilities heretofore not obtainable.

Advantage of using this emulsion for direct playbacks will be realized whether recording is standard, Class "A" push-pull or Class "B" push-pull. The inherent perfection of image definition in the new emulsion means increased processing tolerances in adjusting the Class "F" system for perfect cross-over between the negative and positive half-waves.

"Reduction of Loop-Length Variations in Non-Slip Printers"; E. W. Kellogg, RCA Manufacturing Co., Inc., Camden, N. J. (20 Min.).

Compensation for varying degrees of film shrinkage is accomplished in the Bedford Non-Slip Printer by changes in the length of a loop of film between a sprocket and the printing point. This involves an uncertainty of synchronism by the amount which the loop, as first threaded, differs in length from the final running loop. For most purposes, the present designs do not cause more change in loop length than may be readily tolerated.

For certain purposes, especially if this type of printer is to be employed for 16 mm. films, there may be too much departure for synchronism. A guide roller arrangement is described by which the necessary change in angle of approach of the raw stock to the printing point is attained with a comparatively small change in loop length.



HARRY SHERMAN'S GANG. Above, Stillman Donald McKenzie caught the "Hopalong Cassidy" unit at scene 659, appropriate with so many members of Local 659 grouped around camera. Seated are Gene Strong, producer; Les Selander, director; standing by Bill Boyd (on the horse) is actor Russell Hayden; behind camera, Perry Finnerman, ass't; Harry Merland, operative; Ray Flinsky, ass't; and standing left to right: Jack "Buck" Adams, head grip; Harlow Stengel, ass't; Russell Harlan, director of cinematography; Junius Stout, ass't. Right, snapped at work in the



Alabama hills, left to right, Selander and assistant directors Derwin Abrahams and "Doc" Joos, Harland, Otto Pearce and Flinsky.

Camera

Agfa Speed Film

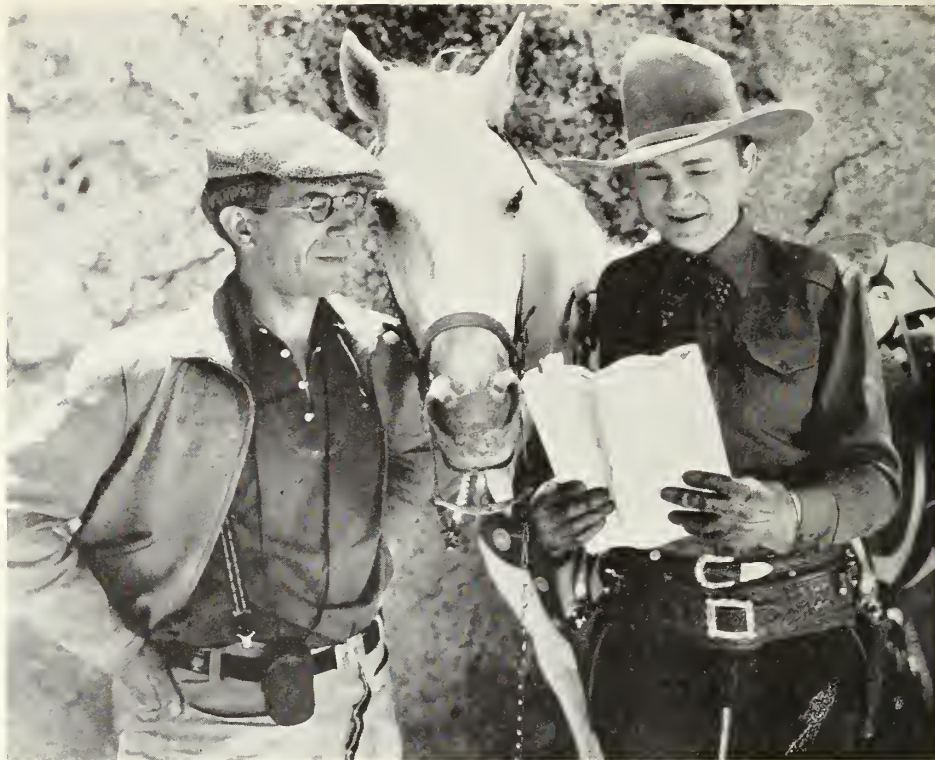
Superpan Press and Super Plenachrome Press meet demands of journalistic and theatrical photographers.

Aiming to fill the demand for super-speed press camera film that will allow journalistic and theatrical photographers extreme sensitivity under adverse lighting conditions, Agfa Ansco last month announced two new cut films, Superpan Press and Super Plenachrome Press. Both will be available in standard sizes.

The manufacturers state that due to new developments in emulsion-making technique, they are able to produce a gain in film sensitivity that allows the photographer an edge of from $1\frac{1}{2}$ to 2 full lens stops, without affecting quality, clarity, gradation and color sensitivity.

Of the two new films Superpan Press has slightly greater speed than its running mate, particularly in artificial light. It possesses panchromatic color sensitivity and has somewhat steeper gradation than the orthochromatic Super Plenachrome Press.

With a sensitivity from three to four times greater than present "super" types of film, these new cut films, the manufacturers state, will in some instances permit good shots with ordinary Mazda light or normal interior illumination. When flash bulbs are used, they function effectively with the smaller and more economical sizes.



GROSSI

STORY CONFERENCE with a critical frown on the countenance of the equine participant. The human members of the trio are Gus Peterson, veteran cinematographer member of Local 659, IATSE, and Tex Ritter, Grand National's western star. The still is from the off-stage snaps on Grand National's "Mystery of the Hooded Horseman."

More Kodak Cases

New field case for Bantam f:6.3 and zippered Six-20 Duplex with handy space for accessories.

Two more new Eastman Kodak cases have been added to the company's line. One is radically different, opening book-fashion and containing an extra compartment for film, exposure meter, range finder and other handy accessories. It is now obtainable for the

Kodak Six-20 camera.

Known as the Six-20 Duplex, the case has a slide fastener on three sides and is $6\frac{7}{8}$ inches long, $3\frac{7}{8}$ inches wide, and $3\frac{3}{16}$ inches thick when closed. Both hand and shoulder straps are provided. It retails at \$8.

Also available now is a field case, in tan leather for the Kodak Bantam f:6.3 camera, of the open-front type, with fold-down flap, constructed so the camera need be removed only for loading. A neck strap is supplied and it retails at \$2.75.



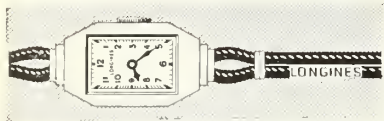
ABOVE. Eastman's new compact zippered photographic kit, for Kodak Six-60 or Duo Six-20. RIGHT. New field kit for Kodak Bantam f:6.3.

PRODUCTION INSURANCE

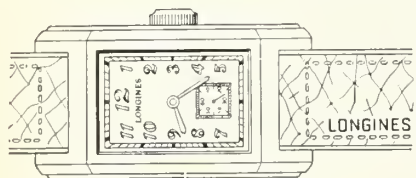
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TOP. Speed Graphic shot by Wally Wallace on Technicolor set lit with arcs. Picture was snapped without flash bulbs during scene rehearsal. BOTTOM. Black-and-white print of a Dufaycolor still from same picture.

Color Pix Stills

Speed Graphic gets fine action
shots with Technicolor arc lights.

Wally Wallace, veteran stillman member of Local 659, is enthusiastic over use of the 4x5-inch Speed Graphic with low-key set lighting used by James Wong Howe for Selznick International's Technicolor production of "Tom Sawyer." Wallace used a Speed Graphic without flash bulbs shooting natural instead of posed action shots by snapping rehearsals, which were lit with the arcs used for Technicolor. "The type of lighting has a very fine balance

and is nicely distributed," Wallace says, "and stillmen will make no mistake in mixing the Speed Graphic with the 'eight by ten' for story action shots."

Results obtained from Dufaycolor, of which he and Fred Parrish shot a considerable amount on several recent S-I productions, also are encouraging, Wallace reports. A black-and-white print of one of the Dufays from "Tom Sawyer," illustrated herewith, was particularly interesting in the manner in which the bothersome magenta was kept under control. Dufay and Kodachrome are much in demand by newspapers and magazines.

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New Kalart Flash

Micromatic Speed Flash allowing an adjustment to "flash-lag" of particular bulbs out this month.

The new Kalart Micromatic Speed Flash will be ready for nation-wide distribution this month. The improved Speed Flash has a micrometer adjustment which allows matching of the synchronizer to the characteristic "flash-lag" of any popular flashbulb. It is adaptable to practically all cameras fitted with Compur type shutters, as well as the Leica and Contax. The latter take a special fitting costing 75 cents. A special fitting, costing 25 cents, enables Argus camera owners to take pictures at 1/200 second. Voltage carrying capacity of the new Speed Flash is 45 volts, which is sufficient for

firing multiple flashbulbs without the use of an auxiliary relay.

The complete Kalart Speed Flash outfit consists of battery case, quick-change socket and six-inch chrome reflector. It will sell for \$13.50.

Accessories available for special requirements include Jumbo Battery case and Kalart Trio head for firing three flashbulbs, a seven-inch reflector, and an extension outlet for firing three lamps at a distance from the camera.

Over Correction

Allen claims purist viewpoint on so-called over correction is all wrong and tells why.

One of the most discussed and least understood things talked of and written about in connection with photography

is the subject of over correction. If the sky has been filtered down and the clouds appear white against the sky the purist photographer will yell, "over correction!"

To such critics we say, "Get yourself out into the country away from the city haze, lay yourself on your back and look up to the sky to the north. What do you estimate the relative reflective value of photographic light from the blue sky and the white fleecy cloud?" I will guess that it is over 5 to 1, cloud against sky. The relative sensitivity of super panchromatic without filter is even higher.

The point is—who can argue over correction of a shot with anyone, but the guy who shot it? How do the critics know what he wanted? If he got what HE wanted, it wasn't over corrected, even if the ding-busted thing is

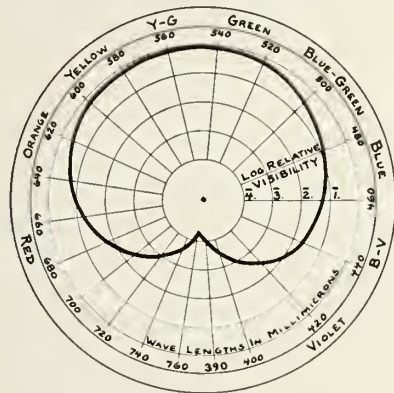
The CINEMATOPHOTOGRAPHER'S BOOK of TABLES

By Fred Westerberg

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STANDARD VISIBILITY FUNCTION

THE VISIBLE OCTAVE



RELATIVE VISIBILITY — INTERNATIONAL STANDARD

Wave Length In Milli-microns	Relative Visibility	Wave Length In Milli-microns	Relative Visibility	Wave Length In Milli-microns	Relative Visibility
380	.00004	510	.503	640	.175
390	.00012	520	.710	650	.107
400	.0004	530	.862	660	.061
410	.0012	540	.954	670	.032
420	.0040	550	.995	680	.017
430	.0116	560	.995	690	.0082
440	.023	570	.952	700	.0041
450	.038	580	.870	710	.0021
460	.060	590	.757	720	.00105
470	.091	600	.631	730	.00052
480	.139	610	.503	740	.00025
490	.208	620	.381	750	.00012
500	.323	630	.265	760	.00006

FILTER FACTORS

(Revised from Int. Phot. March, 1937)

FILTER FACTORS FOR NORMAL DAYLIGHT EXPOSURES ON STANDARD 35mm. MOTION PICTURE FILMS

Filter Used	EASTMAN FILM		DUPONT FILM		AGFA FILM	
	Super-sensitive Type 1217 Back-ground Type 1213	Super-X Type 1227	Micropan Type 103	Superior Type 100 Parpan Type 116	Finopan	Superpan
Aero-1	1.25	1.25	2	1.5	1.5	1.5
Aero-2	1.50	1.50	3	2	2	2
K-1	1.25	1.25	2	1.7	1.5	1.5
K-2	1.50	1.50	3	2	2	2
12	2.5	2.5	3.5	2.2	2.5	2.5
15-G	3	3	4	2.5	3	3
21	3	3.5	4.5	3	3.5	3.5
23-A	3	4	6	4.5	4	4
25-A	4	5	9	6	6	6
29-F	8	10	16	12	12	12
47-C5	6	6	6	5.5	5	5
58-B2	8	7	6	5.5	8	8
N.D. .25	1.8	1.8	1.8	1.8	1.8	1.8
N.D. .50	3.1	3.1	3.1	3.1	3.1	3.1
N.D. .75	5.6	5.6	5.6	5.6	5.6	5.6
N.D. 1.00	10	10	10	10	10	10
3N5	4	4	5	3.5	4	4
5N5	5	5	7	5.5	7	7



Big Pictures

AN FAVORITE since his appearance with William Powell and Myrna Loy in MGM's "Thin Man" pictures as Asta," is this perky wire-haired terrier, who plays "Mr. Smith" in "The Awful Truth." His real name is Skippy and he started in pictures at the age of one, getting his first big role in "Thin Man." Skippy is the star performer of 55 dogs, owned by Henry East, who trains all types of canines and can supply almost any call from a studio. While Rin-Tin-Tin and other valuable picture dogs in the past have been starred in films, Skippy has inaugurated a new trend in dogdom screen circles—character portrayals.

"The Awful Truth"

Columbia comedy given acclaim by previewers as smashing laugh success.

Hailed last month by previewers as one of the smartest comedies of 1937—a year in which comedy of all type has been given a heavy play—was Columbia's "The Awful Truth," starring Irene Dunne and Cary Grant, directed

by Leo McCarey, from a play by Thurston Hughes, which was adapted for the screen by Vincent LaBrie. The screenplay form by Vina Delmar and Joseph Walker was the cinema's first. Ed Bernds the sound engineer, Everett Riskin produced the picture. Ralph Bellamy, Alexander D'Amico, Joyce Compton and Cecil Cunningham have prominent featured roles.

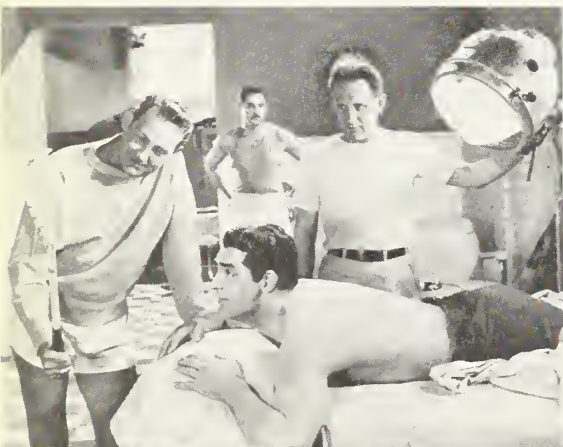
It's a laugh-packed yarn of marital troubles of two high strung characters. Jerry Warriner (Cary Grant) and his wife, Lucy (Irene Dunne), whose trouble begins when Jerry (at lower left) decides to take a harmless marital vacation and go to Florida, stays in a hotel playing cards with "the boss" who crawls under a sun lamp to get a vacation tan. He gets home and finds Lucy out and when she returns accompanied by a handsome foreign teacher, Armand (Alexander D'Amico), her nonchalant explanation that her car broke down leads to a series of complications which are complicated by Lucy's discovery that all is not Florida with the vacation tan.

With one thing leading to another they talk themselves into a situation which is highlighted by a case of custody of their dog, Mr. Smith. Although Lucy wins the dog, Jerry, infuriated, gets a court order permitting him to visit the playboy. Lucy is friendly with a wealthy Oklahoma oil heir, Dan (Ralph Bellamy). Lucy's Aunt (Cecil Cunningham) a tart, ex-actress, is living with her. We see at top right) resuming her acquaintance with night club singer Dixie Belle Lee (Joyce Compton).

Leeson wants to marry Lucy and wants Jerry back. She calls Jerry to discuss his helping her straighten the mixup. Then Jerry shows her his privilege of calling Dan Smith. She pushes Armand out of the bedroom, and when Leeson comes she pushes Jerry in, too. The engagement between Armand and Jerry causes a furore and results in Leeson's departure.

Then the re-marriage angle comes in. Lucy, who has been engaged to socialite Barbara Vance, decides to break up at the last opportunity. She crashes the party at which the engagement was to be announced, posing as Jerry's wife and makes such a vulgar display that she throws the swanky affair into uproar. Feigning to be drunk, she imitates Dixie Belle's dance and Jerry is forced to escort her to the party.

Lucy still feigns drunkenness after a series of mounting accidents, they are forced to stay on the same roof that night at an exclusive mountain cabin, and in the better illustration we see the happy ending which the oldtime title writer would describe as "marital felicity."





DIRECTOR of Columbia's comedy "The Awful Truth" is Leo McCarey (top) who is a stranger to association with big pictures in the laughing vein.

STARS (middle) were Irene Dunne and Cary Grant, both well-qualified for comedy leads.

CAMERA on the harum-scarum yarn was under the able photographic direction of Joseph Walker, long associated with Frank Capra.

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of ebony hue. In other words, correction is not a matter of mystic abracadabra. It's just another part of photography. How much depends on the artistic and photographic aim of the individual as he approaches each shot.

PAUL ALLEN.

Scranton Appointed Ampro Advertising Manager

Appointment of W. F. Scranton as advertising manager of the Ampro Corporation, Chicago, Illinois, manufacturers of both silent and sound motion picture projectors, especially in the 16 mm. field, was announced last month. Scranton formerly was advertising and sales promotion manager for the Victor Adding Machine Company of Chicago.

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RIGHT. The Canady recorder, working parts exposed. CENTER. Dual film phonographs with provisions for keeping films in step and making lab measurements. LEFT. Details of film phonograph, reel housing for film loop at top, adjusting and measuring apparatus in middle and bottom sound head exposed showing photo-cell housing.

Sound

Aiding Research

Modern Canady sound equipment used in phonetic lab of Oberlin College Department of Psychology.

Sound recording and reproducing equipment is finding an important place in modern education, not only in the commonly known "visual education," but also in the higher branches of science and learning. An excellent example is the installation of equipment at Oberlin College by the Canady Sound Appliance Company of Cleveland. The Ohio institution, far-famed for its high standards and many honored graduates, uses Canady sound devices in the Phonetic Laboratory of its Department of Psychology for many detailed investigations in that field.

The recording and playing back of speech and oscillatory sounds required Hi-Fidelity and stable apparatus. Sound recording motion picture film is now used for this work. Other forms of record, such as acetate discs, were found to have an objectionable needle scratch and to wear out when subjected to repeated reproduction. In this film apparatus the essential parts furnished by the Canady organization consist of a recorder using the Canady recording lamp, and of two film-phonographs.

The duplicate film-phonographs are driven by the same motor for the sake of synchrony. The 1/6 H.P. synchronous motor is equipped with a large fly-wheel to smooth the more or less 2.5

per cent voltage and the more or less .05 cycle fluctuations in the 110 volt, 60 cycle power line. Also, each film-phonograph has a friction fly-wheel. The film-phonographs are equipped to maintain a given relative position within 1/32 inch (about 2 milliseconds). Idlers for continuous film loops are provided, and the phonographs may be threaded without cutting the endless loops. Standard 1000 foot reels are interchangeable with the idler system.

Between the reel housing and the sound head there is placed an additional housing to accommodate short lengths of film. This housing contains two flashlight bulb set-ups to serve for reference and for measuring.

The sound head consists of an exciter lamp, a Canady optical system, and a right-angle prism, and a passage-way through the door for the light-beam. The R.C.A. number 919 photo-cell and another R.C.A. number 917 are mounted outside the sound-head in the short-length of 3-inch pipe as shown in the accompanying photographs. These constitute the major part of a

pre-amplifier that is also mounted in the swinging 3-inch concentric line system to the right and above the apparatus. The concentric line then leads to the speech amplifiers.

The Canady Recorder contains, in addition to the three fly-wheels, synchronous motor, etc., a special feature in the Canady recording lamp. Once the slit is adjusted in the lamp's sleeve, no other adjustments need be made. The lamp then may be taken out of the machine at will, and another substituted for it without additional adjustment. The lamp is quite stable from day to day and has a high impedance, which simplifies its coupling to power amplifiers. Frequencies up to 10,000 cycles have been recorded and satisfactorily reproduced.

T and H Pads

Series of practical sound tables starts with figures on design of symmetrical pads.

In following the lead of Fred Westberg's *Cinematographer's Book of Tables* the most obvious need in the sound field is for a pocket sized compilation of tables relating to sound recording.

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Many weighty books on sound are available containing all the useful formulae covering sound channel design and operation but usually under practical conditions the studio soundman can not take time to run through the algebra necessary to solve and apply a complicated formula.

Therefore this series of tables, aimed at eventual publication in handbook form, will be intensely practical and will present tables instead of formulae. The data presented will be arranged in such format as to require little or no computation on the part of the user in solving any particular problem.

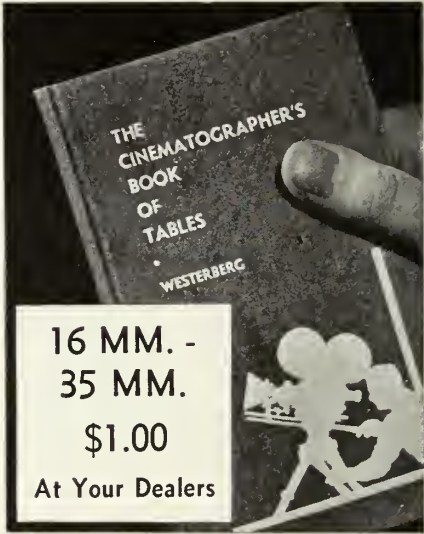
A great deal of the material will be obtained through the courtesy of Electrical Research Products, Inc., and RCA Manufacturing Co., Inc., as well as the other organizations building materials and equipment used in sound picture recording.

The first two tables, presented herewith, deal with a problem which is as fundamental as gain control, as all modern gain control consists of a series of T or H pads cut into the circuit by means of a tapped switch. While the calculation of T and H pads is largely limited to maintenance and installation men it is usually found, in an emergency, that everyone has forgotten the proper formulae required.

Pads are being more widely used to isolate equalizers and other pieces of equipment to prevent change of characteristics due to interaction. It is still surprising to many soundmen to couple a flat amplifier to a flat line and find the combination far from flat, even with proper impedance matching throughout. The use of a pad between the amplifier and line prevents this type of frequency distortion and it behooves every soundman to know how to build a pad when

an emergency necessitates the use of a non-standard line or amplifier.

J. N. A. HAWKINS, 695, IATSE.

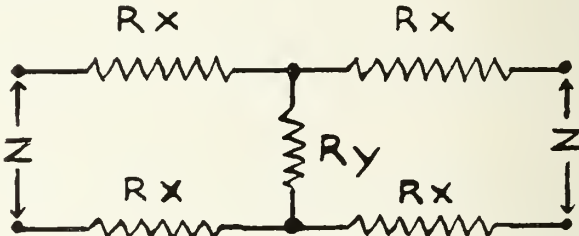
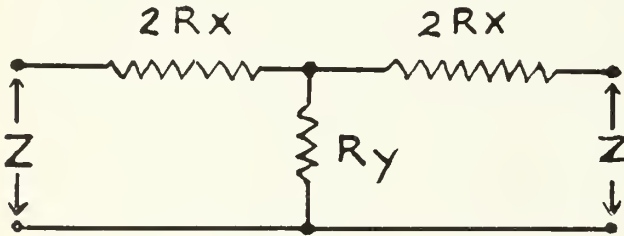


The SOUNDMAN'S BOOK of TABLES

By J. N. A. Hawkins

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Design of Symmetrical Pads



T Pad

Loss in D.B.	Voltage Ratio	z = 50 ohms		z = 200 ohms	
		Rx	Ry	Rx	Ry
.1	.989	.1440	4342	5760	17368
.2	.977	.2378	2172	1.151	8688
.3	.966	.4318	1443	1.727	4792
.4	.955	.5758	1085	2.303	4340
.5	.944	.7193	868.5	2.877	3474
.6	.933	.8635	723.2	3.454	2893
.7	.923	1.007	619.8	4.028	2479
.8	.912	1.151	542.1	4.604	2168
.9	.902	1.295	481.8	5.180	1927
1 0	.891	1.438	433.3	5.752	1733
2.0	.794	2.865	215.2	11.46	860.8
3.0	.708	4.275	142.0	17.10	568.0
4.0	.631	5.658	104.9	22.63	419.6
5.0	.562	7.003	82.24	28.01	329.0
6.0	.501	8.308	66.94	33.53	267.8
7.0	.447	9.565	55.80	38.26	223.2
8.0	.398	10.77	47.31	43.08	189.2
9.0	.355	11.91	40.59	47.64	162.3
10.0	.316	12.99	35.13	51.96	140.5
15.0	.178	17.45	18.36	69.80	73.44
20.0	.1000	20.45	10.10	81.80	40.40
25.0	.0562	22.35	5.640	89.40	22.56
30.0	.0316	23.47	3.165	93.88	12.66
35.0	.0178	24.13	1.779	96.52	7.116
40.0	.0100	24.51	1.000	98.04	4.000

H Pad

Loss in D.B.	Voltage Ratio	z = 250 ohms		z = 500 ohms	
		Rx	Ry	Rx	Ry
.1	.989	.7200	21710	1.440	43420
.2	.977	1.439	10860	2.878	21720
.3	.966	2.159	7240	4.318	14480
.4	.955	2.879	5425	5.758	10850
.5	.944	3.596	4342	7.193	8685
.6	.933	4.317	3616	8.635	7232
.7	.923	5.035	3099	10.07	6198
.8	.912	5.755	2710	11.51	5421
.9	.902	6.475	2409	12.95	4818
1 0	.891	7.190	2166	14.38	4333
2.0	.794	14.32	1076	28.65	2152
3.0	.708	21.37	710.0	42.75	1420
4.0	.631	28.29	524.5	56.58	1049
5.0	.562	35.01	411.2	70.03	822.4
6.0	.501	41.54	334.7	83.08	669.4
7.0	.447	47.82	279.0	95.65	558.0
8.0	.398	53.85	236.5	107.7	473.1
9.0	.355	59.55	202.9	119.1	405.9
10.0	.316	64.95	175.6	129.9	351.3
15.0	.178	87.25	91.80	174.5	183.6
20.0	.1000	102.3	50.50	204.5	101.0
25.0	.0562	111.7	28.20	223.5	56.40
30.0	.0316	117.3	15.82	234.7	31.65
35.0	.0178	120.6	8.895	241.3	17.79
40.0	.0100	122.5	5.000	245.1	10.00

Laboratory

Blue Iron Toning

Allison's lab tables under way with series covering maintenance of processing solution efficiency.

Inaugurating International Photographer's new service, the Laboratory Book of Tables, which eventually will be published in bound form similar to the Cinematographer's Book of Tables, the only preliminary explanation needed is that it will commence with a series of concise, explicit directions whereby film processing solutions may be analyzed for their significant or important constituents in order to maintain the processing solution at a uniform condition of maximum efficiency. Other phases will be taken up when this field is exhausted.

The initial table deals with blue iron toning solution, which most laboratory technicians know, becomes rapidly exhausted during use. Consequently, the quality of color image produced by a partially exhausted solution varies considerably from the image produced when the solution is fresh. Photographic

laboratories have found it imperative that they maintain the concentration of each constituent of the solution so that it will function uniformly at its most efficient level.

Directions and information contained in the accompanying table will enable the laboratory technician to analyze a blue iron toning solution for ferric, ferricyanide, oxalic acid, chloride and active acidity or pH content, and from the resultant data accomplish rational replenishment. (Table on Page 22.)

D. K. ALLISON.

Lighting

Light and Color

Sharp observations on modern color photography and the supreme importance of intelligence in lighting.

What's wrong with color? If you want to know the actual truth, there isn't a darned thing! That is with color photography, although of course there always is room for technical refinements, but there is a whale of a lot about color and its proper treatment

that the film colony and graphic arts workers have as yet to learn.

Recently I met a chap that I've worked with over the past ten years or so, who came in and said, "I know all about the Blank color process now. I WORKED TWO WHOLE WEEKS TO FIND OUT WHAT WAS WRONG WITH IT!" Now, dear folks, I have made hundreds of color photographs for national advertising accounts (some of them pretty good and some very lousy) at prices from five hundred to fifteen hundred dollars per shot. Have had many of them reproduced tens of millions of times, and frankly I don't know anything, except what I see as the finished result in print or on the screen.

With the help of the editor we will now throw the personal pronoun out, and go into something that will be of some real and practical use to you and you and you—we hope!

With all the ballyhoo about this-or-that production being the last word in color at a cost of millions, well, you can throw the most of the results insofar as color is concerned right into the handiest ash-can. It has remained for one scene, that will make any art trained mind gasp over sheer beauty and realism of color, to appear in a one reel scenic—and that is the next to the last scene in the M-G-M short



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The **LABORATORY BOOK** of **TABLES**

By D. K. Allison

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ANALYSIS OF BLUE TONE					
SAMPLE AS DELIVERED TO LABORATORY:					
Filter if turbid, decant if clear. Reject residue.					
Precipitate four 50.0 ml samples with 10 ml 15N NH ₄ OH. Wash ppt. three times with 15 ml portions of 10% (vol) NH ₄ OH, uniting filtrate and washings. Treat two samples according to Procedure 1, two according to Procedure 2.					
Procedure 1 *		Procedure 2		Treat two 100 ml samples according to the C & R glass electrode technic. Report EMF as pH (Alternatively, determine pH colorimetrically employing Thymol Blue. Photoelectric Colorimeter recommended)	Treat two 10.0 ml samples as follows: Place sample in generator of Bunsen-Fresenius apparatus, and 400 ml Sol'n D in absorber. Add 40 ml Sol'n C to generator, close and secure quickly, and heat to boiling for 7 min. Disconnect apparatus, wash any solution adhering to delivery tube into absorption vessel. Transfer whole to beaker, add 10 drops Sol'n G, and titrate with N/40 Na ₂ S ₂ O ₃ to colorless. vol Na ₂ S ₂ O ₃ x 0.893 = gms chloride (as Cl) per liter. * Alternative Treatment for Precipitate, Procedure 1: Dissolve precipitate in 150 ml 2 N H ₂ SO ₄ , wash filter matt in additional 50 ml, unite. Add 1 gm granulated zinc, iron free, heat on a water bath in a flask fitted with a Bunsen valve, until a spot test with potassium thiocyanate shows the reduction to be complete; then cool, filter through glass wool, and wash all filtrate through. Titrate immediately with N/40 KMnO ₄ until a color is obtained which is permanent for 30 seconds. vol. KMnO ₄ x Norm KMnO ₄ x 19.29 = gms FE ₂ (SO ₄) ₃ (NH ₄) ₂ SO ₄ .24 H ₂ O per liter Note: When the above volumetric method is used, the initial filtration of the ferric hydroxide precipitate must be performed through asbestos fibre.
Ppt.	Filtrate	Ppt.	Filtrate		
Ignite 15 min. @ 800°C. in a weighed crucible. Cool in desiccator. Weigh. gms. Fe ₂ O ₃ x 120.5 || gms. ferric ammonium sulphate per liter.	Make just acid with 6N H ₂ SO ₄ ; add 10 ml sol'n B & 10 drops G. Titrate with N/40 thio-sulfate. x 0.1645 || gms. K ₃ Fe(CN) ₆ per liter	Reject	Add 20 ml Sol'n A Filter		
			Precipitate	Filtrate	
			Dissolve in 100 ml Sol H add 5 ml H ₂ SO ₄ . Heat to boiling, titrate with N/10 KMnO ₄ to first pink flush. vol. KMnO ₄ x 0.126 || gms H ₂ C ₂ O ₄ 2 H ₂ O per L.	Reject	
DIRECTIONS FOR THE PREPARATION OF SPECIAL SOLUTIONS AND REAGENTS FOR THE ANALYSIS OF BLUE TONE					
Solution A	36 gms. Ca(NO ₃)/liter	Solution G	6 gms. soluble starch, triturated cold, made to one liter with boiling water, 10 gms. ZnSO ₄ added.		
Solution B	130 gms. KI 70 gms. Zn SO ₄ /liter	Solution H	8N HNO ₃		
Solution C	40 gms. KMnO ₄ 60 ml. H ₂ SO ₄ /liter	N/40 Na ₂ S ₂ O ₃	6.205 gms. Na ₂ S ₂ O ₃ /liter		
Solution D	100 gms. KI/liter	N/10 KMnO ₄	3.161 gms. KMnO ₄ /liter		

“Spring Time in the Rockies”—to shock me into the fact that Technicolor IS GOOD, not next week, month or year, but NOW! Disney’s product excepted—it has always been—and his films don’t enter into this discussion; for he has each color always under his direct control.

Now having seen what can be done, a little serious thought as to what is wrong with what is now being done might be of some real constructive value.

Past performances of many art directors and technical advisers seem to be to make color films full of color—not COLORFUL. More or less haphazard guesses are being made by persons who know nothing about actual color photography—and seem to have forgotten the simplest and earliest of their lessons in physics, the WHY of color.

In the first place a thing is RED because it REFLECTS RED LIGHT and ABSORBS all other colors of light that

land on it. Similarly for other colors.

Try this simple experiment. Flood a red object with a white spot light and then slip a blue gelatine over the light source. NOW NOTE THIS FACT. In direct proportion to the amount of blue, and its complementary value to the redness of the object lighted, it will be anything from magenta to purple to a jet black, depending entirely upon the actual relationship of the colors to one another.

Now try this one. Take a white flat and a yellow one and place a girl with a light blue gown in front of the white wall and carefully light her. Notice the purity of color of the blue. Then slip in the yellow background and watch the REFLECTED light from the yellow background turn the edges of the gown GREEN. NO? Well, try it. The green is there and even if you can’t see it, the color camera most certainly will.

ANY REFLECTED LIGHT WILL AFFECT THE PURITY OF COLOR OF ANY OBJECT IN ITS PATH. This accounts for change of color in many close-ups, as contrasted with the long shots of the same scene, in cases where the lights bounce off something on to something else.

There is another point that fits in here, that simple rule of physics that reads “light reflects from an object at the angle of its incident” (same angle as it arrives) *with this slight variation* that a rough surface (and there are darned few smooth ones) not only reflects light—it refracts it also, and this guy, refraction, is the bird who makes color photography a lot tougher. For direct reflections can be controlled by the placement of the lighting equipment, but old refraction—well, he is up to you and your directors—art and picture.

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successful color pictures are "made" long before the camera is even brought in on the set. Color harmony of set, costume and action must be planned out in advance for its "audience effect." The human eye rapidly shifts to the brighter colors—like a bull they see RED right now! So, for the love of mud, keep red objects out of the background if you are interested in having them watch what is going on in the foreground.

Also, it's a good idea to simplify the color schemes of all production and keep away from PURE COLORS (see any of the old masters). The more you subordinate pure colors the more effective the composition will be.

There is an old saying that "all cats are gray in twilight." The simpler the compositions, the more beautiful color can become—if you don't believe me take a look—many looks—at the last three scenes in the M-G-M film "Springtime in the Rockies," and you will commence to grasp the real portent of color cinematography.

PAUL ALLEN.

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Props-Costumes

Modern Backlot Magicians

Resourceful craft experts include ladder wizard, thunder, lightning, rain and wind makers, snowers-in, initial carvers, clothes agers, dummy doctors and host of others.

In any major studio there are dozens of odd and interesting corners which no visitor ever sees, and which most of the studio's regular employees know about only through hearsay. There you will find resourceful and expert craftsmen who play vital, though often unsung, roles in the making of every picture. Their ability to produce anything a script calls for, either in the original or perfect facsimile, is so phenomenal that it is completely taken for granted in the daily routine of film production.

The typical studio visitor is always too much interested in the stars he sees to pay much attention to the world of little miracles that surrounds them.

Who, for example, would think of stopping to examine a studio "dummy" if Bette Davis were just around the corner emoting in "Jezebel"? Who could feign interest in the artificial roses which Joe Trusty makes to use in scenes under the hot lights that wilt the real ones, if Olivia de Havilland were blooming and blushing on the same set?

The ladder shop is one such corner. For a long time it occupied a lean-to on the Warner back lot, near the scenery storage docks. Now it has a corner of its own in the huge new Crafts Building on the Burbank lot, but it still is off the beaten path for visitors. It is no magnet to draw the curious, yet it is, in its own way, an interesting place because some four hundred ladders are in almost daily use at the studio and the lives of players, prop men and humbler studio workers are entrusted to them.

Gus Erbes has run the ladder shop for the seven years it has been in existence. He is a tool maker who turned carpenter when his health gave out over the forges, and his pride in his work is the biggest thing about him. No person on the Warner lot has been injured due to a faulty ladder during that seven-year period, although before the studio made its own climbing equipment, ladders were one of the commonest causes of hurts.

"No one ever returns a borrowed ladder," says Erbes. "We lose many each year because our own employees forget them on location or at other studios where we are using borrowed sets. Every month we send out a truck and go

through the ladders in other studio ladder shops, trying to locate our lost ladders. Other studios leave their ladders here, too. We think ours are better, but that's probably a matter of opinion."

Not far from the ladder shop is the shop where icicles are made. Icicles are important to winter scenes, for the Los Angeles Chamber of Commerce is right in its insistence that icicles never form naturally in the water spouts of that city. Movie icicles used to be made with plaster. Now they are made in the plaster shop, but the methods have changed.

Crumpled cellophane makes a nearly perfect imitation of the wintry eaves-droppers and when dipped in paraffine and nailed in place, they can be made to drip realistically. Jack Baker and David Grechette, the men who make icicles, make the barnacles needed for pictures with a sea locale—and in much the same way.

Oddly enough, the man who makes the Warner Brothers cobwebs is an electrician by trade and an artist at heart. He perfected the machine that sprays the glue mixture he uses for the webs, and he can make more web during one noon hour than an industrious spider could spin in a lifetime. His name is Bob Martin and he keeps his spinning machine under lock and key because practical jokers are always wanting to borrow it to spin "webs" over desks or work benches of other men.

The electrical department also controls the studio winds from gentle zephyrs to howling hurricanes. Wind is stirred up by two types of electrically-driven fans. Specially designed silent rotary fans produce breeze enough to ruffle the curls of an actress like Olivia de Havilland in "Adventures of Robin Hood." Huge, powerful motors drive airplane propellers for windstorms, blizzards and hurricanes. Between pictures the studio wind rests calmly in a dark warehouse on the lot, not far from the place where Bob Martin keeps his cobweb equipment.

Artificial flowers, which look like real flowers and photograph even better, are made in great numbers by Joe Trusty in his new offices and workrooms in the property building. Few people get to see him at work and fewer still



Back lot flashes. ABOVE. Huge cyclorama gives outdoor effect on sound stage. TOP RIGHT. Wind machines. BELOW. A Warner's dummy gets a new face and at RIGHT a corner of the huge prop shops packed with lamps and candelabra. BOTTOM. Studio experts provide realistic snow and icicles.



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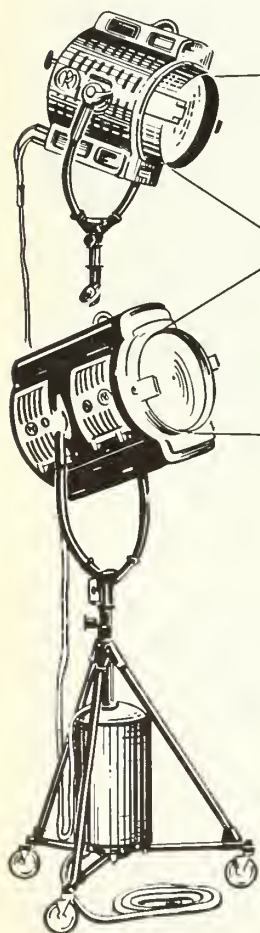
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can tell his orchids from the real ones when worn by the stars.

Trusty's love of flowers, however, is even more real than the blossoms he manufactures. When hard pressed for table bouquets, he can always hurry home to his own flower garden and bring back a temporary substitute for his needs. Real flowers last a scant hour under the lights, but Trusty's hand-made blooms can be used for several years.

Studio dummies—canvas bodies stuffed with excelsior and boasting life-like papier-mache heads and hands—are being constantly repaired and restuffed and painted in the studio prop shop. It is axiomatic that no dummy is ever thrown away. It may be tossed from an airplane, run through with a broadsword, punctured by Robin Hood's steel-tipped arrows, run over by an automobile or scorched in a studio made fire, but in each case the dummy is reclaimed, sewed together, head and hands repainted or replaced and the dummy goes back to a shelf in the property room, ready to do and die for the studio another time. A great many dummies were taken on location with the currently shooting "Robin Hood" company because there will be many casualties in the battles in that picture. Each dummy was completely remade, however, before going on the trip. "Limey," the property man, explained that he had given each of them an "old English" face for the assignment.

The "green gang" is another regular studio department which is seldom in evidence when visitors are about. The green gang builds lawns and gardens over night, twines ivy against old walls, transplants trees and shrubbery and keeps them looking green for the duration of the picture. These men work almost entirely at night and many of them have actually never seen one of their company's stars at work.

The "outside rag man"—meaning the man who puts up awnings, exterior draperies and set covers—is another little known specialist in studio life. Outstanding in this group is the work of men like Harry Badolas, the canvas man whose sole job it is to sew huge stretches of muslin and canvas together to make the panoramic backings for inside sets supposed to be out-of-doors, is also important but unsung.

Other groups, the rain-makers, the snowers-in, the thunder and lightning crew, the firearms specialists, the powder man, the prop makers, the smoke and fog makers, the clothes agers, the initial carvers and the knot hole cutters are all experts in their trades. They work minor miracles in every studio every day. To them goes much of the credit for fine production qualities of the Hollywood brand of film entertainment.

CARLISLE JONES.

Projection

New Continuous Projector

Louisville firm marketing non-intermittent device using mirror angle optical system for advertising and display films under dozen patents and exclusive license deals.

Since the first "movies," inventors and technicians have speculated and experimented toward making the films "move" by means of a continuously moving film rather than the present system which jerks past the lens at a rate of ninety feet per minute, with a fraction of a second, stop-start, stop-start movement. One off-shoot of this interesting and complicated subject is out of the laboratory and into the commercial selling stage. This is the new Flo-Lite projector, which this month hits the market, aimed particularly at the advertising field.

The new device, actually using continuous projection is manufactured and sold by the Advitagraph Corporation of Louisville, Kentucky, headed by Jack Moranz, nationally known newspaper artist and a former vaudevillian. The principle of the machine is not particularly new, but the Moranz development, after considerable research and expense, brings it into practical and successful application for the first time.

For the present Moranz is promoting the Flo-Lite for use in show windows, theatre lobbies, railroad stations, etc., with a weather eye on its possibilities for billboard display advertising and other film outlets. Its possibilities for visual education also are to be exploited. Application of the basic ideas to regular picture photography and projection still are to be explored, although news of the development undoubtedly will be of interest to Hollywood technicians and theatre projectionists.

Virtually every photography fan, even the tyro, knows that film action does not actually move, and that the passage of the film through camera or projector is not continuous. Motion picture film makes around 1,440 stops each minute as the film whirls through at 90 feet per minute. Excellent mechanical adjustments in modern equipment, along with the optical law of persistence of vision, create the illusion of smooth motion.

Since early "movies" the idea of continuous instead of intermittent projection, has intrigued technicians, inventors and publicists. As recent as two years ago, W. B. Courtney, writing in *Collier's*

about movie technique advances under the heading, "Stupendous, Colossal, Gorgeous," said:

"Continuous projection will be one of the factors in eliminating flicker and shadow. . . . Continuous projection will dispense with shutters. Each frame will dissolve out and the succeeding frame will dissolve in, so imperceptibly that you will not be visually aware of it, yet giving a sufficient dead, or black,

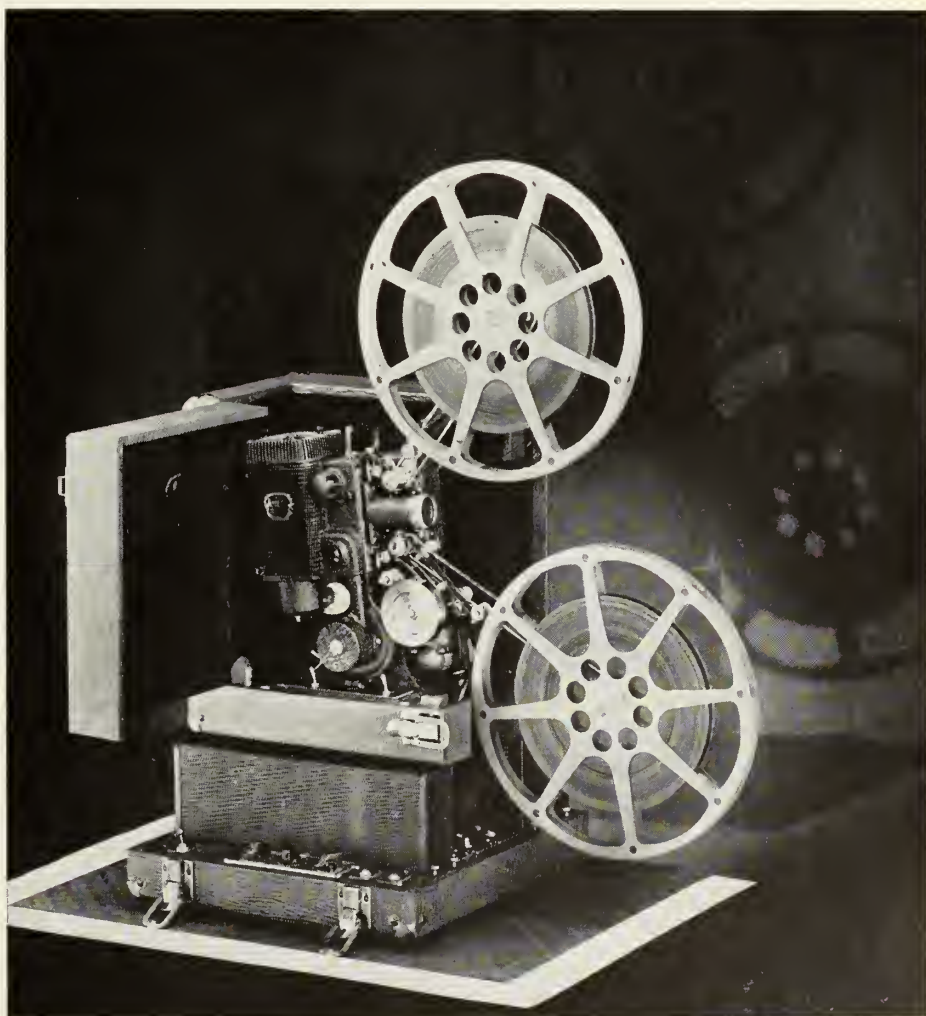
space between each picture that will act as an interruption with the virtues but none of the vices of the shutter."

It was through the use of mirrors that Moranz succeeded in developing an optical apparatus for producing continuous images without any interruption upon a motion picture screen. His new device is being manufactured under 12 U. S. patents and exclusive license agreements.

The projector employs a compensating system of optically correct angles. These angles are of prismatically shaped mirrors mounted on an endless chain or belt. The mirrors are in constant motion and throw the light beam into the lens system as they receive it, thus compensating or superimposing the image carried by the beam.

The film container and the aperture is a single unit. The whole system is compact, requires no special service to operate, and puts black-and-white or color motion pictures on the screen equally as bright in daytime as at night.

The Flo-Lite makers claim among other features the elimination of the



AMPRO'S NEW MODEL "L" is shown above. Conveniently portable, the new 16 mm. sound-on-film projector handles reels up to 1600 feet. Operating controls of projector and amplifier are centralized on two panels. Forced ventilation protects all standard pre-focused base projection lamps up to and including 750 watt. Still picture button permits exposing one frame at a time. Quality sound reproduction (licensed by Western Electric) is produced through a three stage cycle A plus type amplifier.

optical interruption, flatness of image and the scarcity of light produced by shutter projectors.

The projector as manufactured by Moranz for advertising purposes is housed in the base of a modernistic five foot tall cabinet, with a fifteen-inch screen at eye level. The cabinet may incorporate the trade-mark design of any national advertiser, if such is practical.

That the new style projector is adaptable to many purposes is obvious. It uses standard film. It projects the film continuously. It is as simple mechanically as it could conceivably be. It takes up very little space. It is economical of operation, and it is guaranteed against mechanical break-downs. It also is low priced.

For the advertisers the projector provides a means of direct and entertaining advertising at point-of-sale. For demonstrating purposes, in salesmen's

meetings, clinics, etc., it also is highly practical. It also can be used very effectively in the schoolroom.

Another advantage is in the use of color film, where the jerking of the intermittent projector damages the emulsion much more rapidly than with black-and-white. A color film can be used in the projector without danger of damage, the manufacturers claim.

It can be equipped for sound, and also can be designed to use wide film, which cannot be projected so well in an intermittent machine because of the strain of stopping and starting.

This type of continuous projector in which the word, continuous, refers to the film movement, should not be confused with another type now in frequent use in advertising, in which the film is controlled to keep on passing over and over again through the projector. The Advitagraph device, of course, has this feature also.

What Do You Think?

Academy Research Council and Society of Motion Picture Engineers wage war over standard aperture plan; herewith the issues and the viewpoints of both factions.

An open split has developed between the Academy Research Council and the Society of Motion Picture Engineers over the ARC's suggestion (Int. Photog., Oct., 1937, ill.) toward revision of the Standard Aperture adopted in 1932. Both organizations have unlimbered their mimeographs for a barrage of lengthy statements, while several trade journals have jumped into the fray on one side or another. The result has been considerable yelling and squawking of such a nature that the issues are badly confused for many technicians, and virtually unintelligible to the non-technical members of the industry.

As briefly and concisely as possible the facts are these: Studios want to take advantage of as much possible space in the film frame as can be obtained for action. Theaters wish to avoid costly change and also the loss of action that results when steep pitches from projection booth to screen cause that well-known phenomenon, "key stoning." When that happens the top of the screen image is wider than the bottom and it is necessary to mask out the irregular portion to maintain a proper image shape. This causes loss of part of the photographed action.

Practically all the arguments now being advanced were hashed and rehashed when the uniform aperture was adopted in 1932. It was adopted at that time because the addition of the sound track to the film frame created a condition of chaos on the same point now at issue—photographed action, and it then was a compromise between the same opposing factions.

At its 1937 Spring Convention in Hollywood, the SMPE recommended that "cameramen draw upon the ground glasses of their view-finding devices, hair line rectangles that could be used as guides or danger signals in composing their scenes." The SMPE proposal was that the hair-line rectangle should be 0.815"x0.590". The SMPE did not recommend changing the aperture but suggested the camera method as a precautionary measure to "make allowance for screen masking, film weave in the projector, keystone effect, etc."

Apparently this did not meet with the approval of the studio faction, as represented in the Research Council. This group in September reversed the SMPE plan by advancing a suggestion that the standard camera aperture be retained but that the projector aperture be enlarged from 0.825"x0.600" to 0.846"x0.615" and that it also be moved 6½ mils farther away from the sound track. This would increase the projector aperture by .015" in height and by .021" in width. The lateral move of the projector aperture would also bring its center line over to coincide with the center line of the camera aperture.

The Academy technicians claimed this would make for better pictorial composition and also would be advantageous for process, composite, title, etc., shots.

The SMPE Projection Practice Committee issued a report at the Fall Convention last month stating it was "unable to concur with the Academy's proposal." Their reasons given in an 8-page report included:

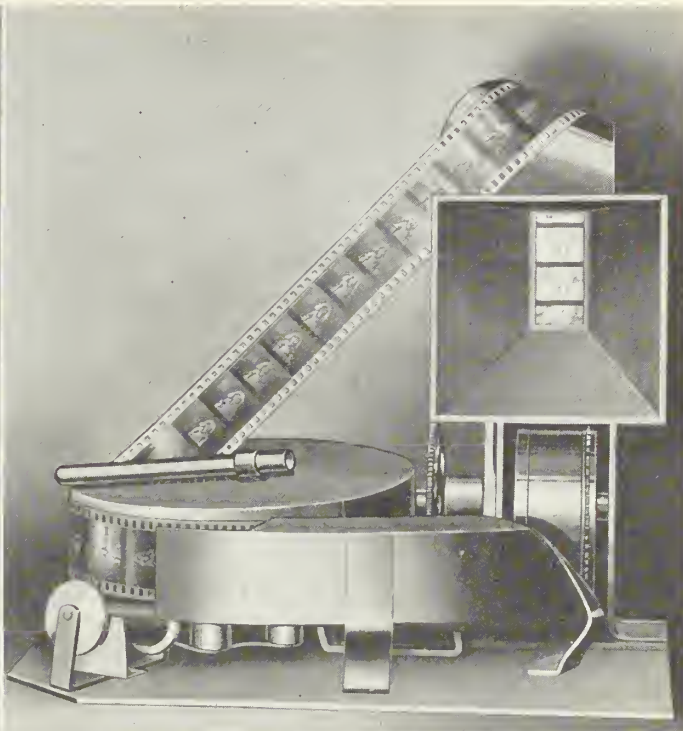
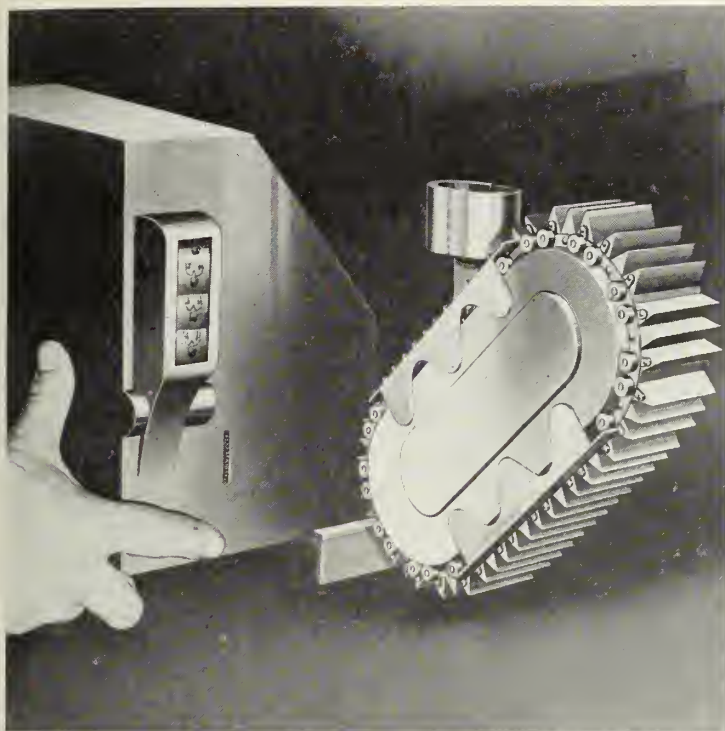
(a) **FILM SHRINKAGE AND WEAVAGE.** Claim that "combined effect of shrinkage and weave during film travel, occurring throughout the photographic, processing and projection processes, even at present may lead to danger of non-framing of the picture by the projector aperture" and that "before any attempt is made to encroach upon the small margin of safety now remaining, careful consideration should be given to maximum lateral film shrinkage and weave" as "everyday experience shows great variation" so that under the Academy proposal "in extreme cases even images of the sprocket holes might appear on the picture."

(b) **PHOTOGRAPHIC COMPOSITION.** Regarding the Academy claims that increasing the projector aperture 21 mils horizontally and 15 mils vertically, stated that "simple calculation shows that . . . will result in an increase of area of projected aperture of only five per cent. In linear dimensions, this would mean an addition to a 20x15-foot screen picture of only three inches on each side, and 2¼ inches at top and bottom . . . and this would never in any reasonable sense achieve the photographic improvement sought for, up to the limit of the 35 mm. film.

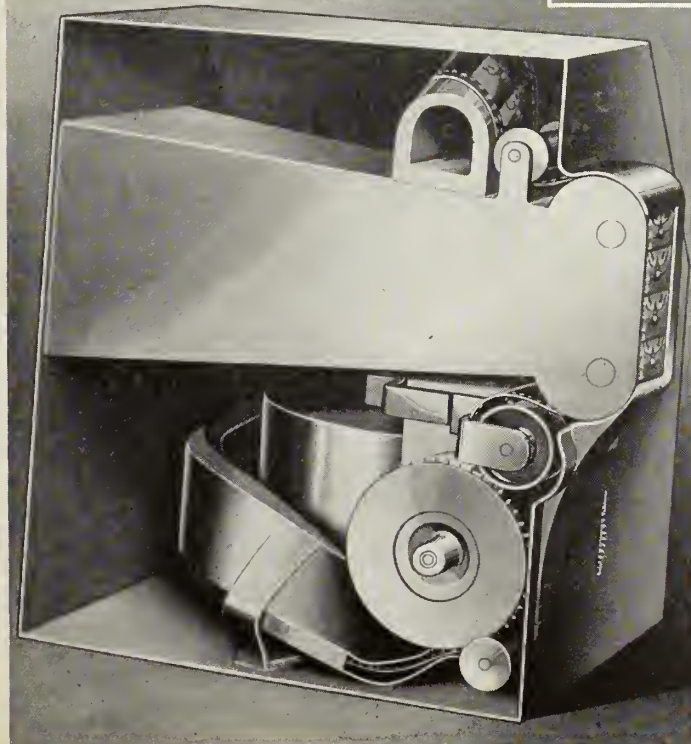
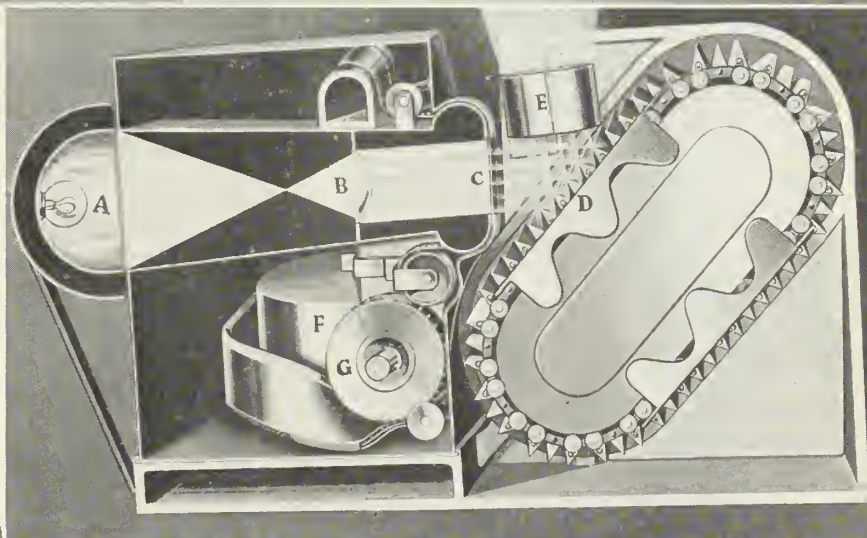
"Although the remarks made above have been specifically connected with screen images, it is obvious that they apply equally well to studio sets and camera images. The Projection Practice Committee is sympathetic toward any attempt to improve photographic composition, scope of scenes, size of aperture plates, etc., that would result in any real advantage; but it is the Committee's feelings that the change, to be justifiable, would have to be entirely more substantial than is possible in existing mechanisms. In the case of the Academy's proposed specifications, it is the Committee's feeling that any advantage resulting therefrom will be negligible."

(c) **SCREENS AND MASKING.** It is contended that "any enlargement of projector aperture will produce an enlargement of screen image, and consequently the screen will have to be remasked. Moving the masking is in itself a fairly expensive job; but, in addition, it should be borne in mind that screens in thousands of theaters throughout the country are by no means new. Many of them are quite dirty and discolored, and moving the masking will leave a white border around the edges of the dirty and faded portion. A two or three-inch white strip around the edge of a 20-foot screen would be bad enough in the case of black-and-white projection, but it is obvious that the situation would be still more unfortunate when color-pictures are projected. This means, then, that either the screen must be cleaned or otherwise renovated, or a new screen must be purchased."

(d) **Cost.** While stating it is extremely difficult to estimate exactly what the cost would be to effect a change . . . a fair idea may be gained by remembering that there are approximately 16,000 theaters in the United States that would be forced to buy new apertures, shift screen masking, and probably be required either to renovate screens or buy new screens. It is estimated that the change could not be effected even in small theaters for less than \$50, and may amount to as much as several hundreds of dollars when necessary to purchase new screens. It is probably not too much to anticipate that the cost to exhibitors would be in the neighborhood of \$1,000,000 . . . all theaters could not make the change at the same time. Accordingly, introduction of the proposed aperture would extend over a considerable period during which much confusion and many poorly projected pictures would result. In the case of theaters that could not afford to make complete change immediately, they could, of course, install the proposed aperture; but in



Flo-lite projector. ABOVE. The film container is cartridge style and as easily replaceable as a bulb. TO RIGHT. Cartridge and aperture are a single unit; film constantly repeats itself. RIGHT. Diagram of Flo-lite arrangement: (A) lighting unit is an auto headlight lamps with 2000 hour guarantee and specially designed reflector; (B) condensing lens specially designed for the Flo-lite; (C) aperture where film flows by in steady stream; (D) pyramidal mirrors on endless belt, which compensates the motion of the film; (E) series of double lenses which make possible the super-imposing of two frames to give a stereoscopic effect; (F) container holding the repeating film; (G) film sprocket, three times larger than sprockets used in most projectors. BOTTOM LEFT. Film cartridge is completely metal covered to prevent fire danger. BOTTOM RIGHT. Trade-mark of a product may be used to provide display cabinet design.



that case the picture would spill over upon the masking. If they persisted in using the present standard aperture, while cinematographers were taking advantage of enlarged photographic area by allowing their actors to approach closer to limits of the ground-glass in their view finder, such theaters would be cutting off more of heads and feet than ever before."

The Academy body came back with a press statement a few days later, defending its memorandum proposing a new aperture size, principally on the grounds that its real purpose was to solicit opinions and suggestions and attacking statements that it would bring sensational costs to the theaters as "grossly exaggerated."

The statement by Major Nathan Levinson, director of sound at Warner's, and vice-chairman of the ARC, pointed out that "it was our purpose in issuing this memorandum to obtain technical opinions on the proposed change. Whether or not any revisions are adopted by the industry is of little moment at this time, but the Research Council is fulfilling its primary function in this matter, as in all others with which we are concerned, in acting as a clearing house for the industry in carefully investigating all matters in connection with any technical change in advance of making that change. Stories in the press have been brought to our attention carrying figures purported to indicate the costs to the theaters of revision of the aperture dimensions. These indicated costs, in my opinion, have been grossly exaggerated."

"In addition, revision proposed by the Council, if approved by all concerned and eventually adopted by the industry, is very flexible and will be optional with any theater. Those theaters which may not wish to expend the small amount of money necessary to purchase and install aperture plates of the new dimensions and alter their screen masking, may continue as at present, but those theaters which may wish to take advantage of the new improvement may do so at a small cost by installing new plates and remasking as their screens are cleaned or renewed."

"Our Committee on Standardization of Aperture Framing, under Chairmanship of Grover Laube, of 20th Century-Fox, will continue its consideration of all technical opinions submitted by representatives of studios, equipment companies, commercial laboratories, theater circuits and other technical organizations, including, of course, the Society of Motion Picture Engineers, and the Committee will submit findings to the Council, based upon the technical opinions of experts in all branches of the industry who are co-operating with the Committee in the matter. If approved by the Council, these recommendations will be then transmitted for action by the proper authorities concerned with a change in equipment such as is involved in this case."

The issues therefore are:

First: Shall the cameraman photograph within a slightly smaller area than at present, or shall the projectionist use a slightly larger aperture and more screen area—in either case with the object of improving pictorial action and assuring that vital action is not cut off from theater audiences?

Second: Will the change proposed by the Academy bring new technical dangers?

Third: Will the Academy idea be so costly as to over-balance the hypothetical benefits to be obtained by the plan?

Patents

Last month the following patents of interest to readers of International Photographer were issued by the U. S. Patent Office:

No. 2,095,312—EXPOSURE DETERMINING DEVICE FOR CAMERAS. *John Cahn*, New York, assignor to Alco-Gravure, Inc., New York, a corporation of New York.

A photocell exposure meter mounted on a bracket so that it can be swung into and out of exact line with lens.

No. 2,095,536—MOTION PICTURE PROJECTOR. *Zoltan Takats*, West Inglewood, N. J.

A motion picture projector which is provided with a rotating mirror for directing the light from the lamp in the lens system.

No. 2,095,744—CINEMATOGRAF APPARATUS. *Clinton R. Hanna*, Wilkesburg, Penn., assignor to Westinghouse Electric & Mfg. Co., a corporation of Pennsylvania.

An intermittent film feed mechanism which is cam-operated.

No. 2,095,826—METHOD AND APPARATUS FOR PRINTING LENTICULAR FILM. *Oran E. Miller*, Rochester, N. Y., assignor, by mesne assignments, to Eastman Kodak Company, Jersey City, N. J., a corporation of New Jersey.

A system of printing lenticular films which feeds the film past an exposure aperture of a height equal to the width of a single lenticulation in a direction to eliminate moiré.

No. 2,095,831—FILM DRIVING APPARATUS. *Harlow D. Phillips*, Rochester, N. Y., assignor by mesne assignments, to Eastman Kodak Company, Jersey City, N. J., a corporation of New Jersey.

A combined picture projecting and sound reproducing apparatus provided with a variable speed connection.

No. 2,095,848—FILM DRIVING APPARATUS. *Otto Wittel*, Rochester, N. Y., assignor by mesne assignments, to Eastman Kodak Company, Jersey City, N. J., a corporation of New Jersey.

A film feed for projectors which advances two portions of the film at the same linear speed.

No. 2,095,850—MOTION PICTURE APPARATUS OF THE MAGAZINE TYPE. *Otto Wittel*, Rochester, N. Y., assignor by mesne assignments, to Eastman Kodak Company, Jersey City, N. J., a corporation of New Jersey.

A combination of camera magazine and a claw type film advancing means.

No. 2,094,063—SOUND FILM REPRODUCING APPARATUS. *John C. Davidson*, Brooklyn, N. Y., assignor to Electrical Research Products, Inc., New York, a corporation of Delaware.

A masking device for sound on film reproducers which is operated by a plurality of photo-cells.

No. 2,094,095—FILM TAKE-UP DRIVE. *Milford Edwin Collins*, Colingswood, N. J., assignor to Radio Corporation of America, a corporation of Delaware.

A reel drive comprising an axially adjustable cone with a conical casing surrounding the cone and coupled to it by a viscous fluid.

No. 2,094,162—FILM FEEDING APPARATUS. *Albert B. Scott*, Los Angeles, California.

A film feed device for motion picture cameras and projectors comprising a film engaging rocker arm with a rotary driving member and means for framing the film.

No. 2,094,330—DEVICE FOR COPYING LENTICULAR FILMS. *Kurt Rantsch*, Teltow-Seehof, near Berlin, Germany, assignor to Opticolor Aktiengesellschaft, Glarus, Switzerland, a Swiss corporation.

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ing a plurality of lenses in the light path, each being of smaller aperture than that of a lenticulation.

No. 2,094,723—RECORDING SOUND PHOTOGRAPHICALLY. *Richard Schmidt and Alfred Kuster*, Dessau in Anhalt, Germany, assignors to I. G. Farbenindustrie, Aktiengesellschaft, Frankfurt-on-the-Main, Germany.

A process for recording sound track which comprises exposing the film so that after development it will show a blackening of 2.5 to 3, and then developing, bleaching, flashing and redeveloping the film.

No. 2,094,737—RECORDING AND REPRODUCING OF ELECTRICAL IMPULSES. *Glenn Leslie Dimmick*, Westmont, N. J., assignor to Radio Corporation of America, a corporation of Delaware.

A sound on film recording system which includes a triangular aperture and a slit in the light path, means for vibrating the beam, and means for moving the aperture.

No. 2,094,847—METHOD AND MEANS FOR MANIPULATION OF SOUND RECORDS. *George P. Regan and Charles S. Franklin*, Los Angeles, California, assignors to Regan-Day, Inc., Los Angeles, California, a corporation of California.

Sound apparatus comprising a reproducing pick-up with a relay pick-up in advance of the reproducing pick-up and means for driving the film successively past each of said pick-ups.

No. 2,094,922—FILM WINDING APPARATUS. *Wesley Ernest John*, Johannesburg, Transvaal, Union of South Africa.

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Before me, a Notary Public, in and for the State and County aforesaid, personally appeared Edward H. Gibbons, who, having been duly sworn according to law, deposes and says that he is the Editor of the International Photographer, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to wit:

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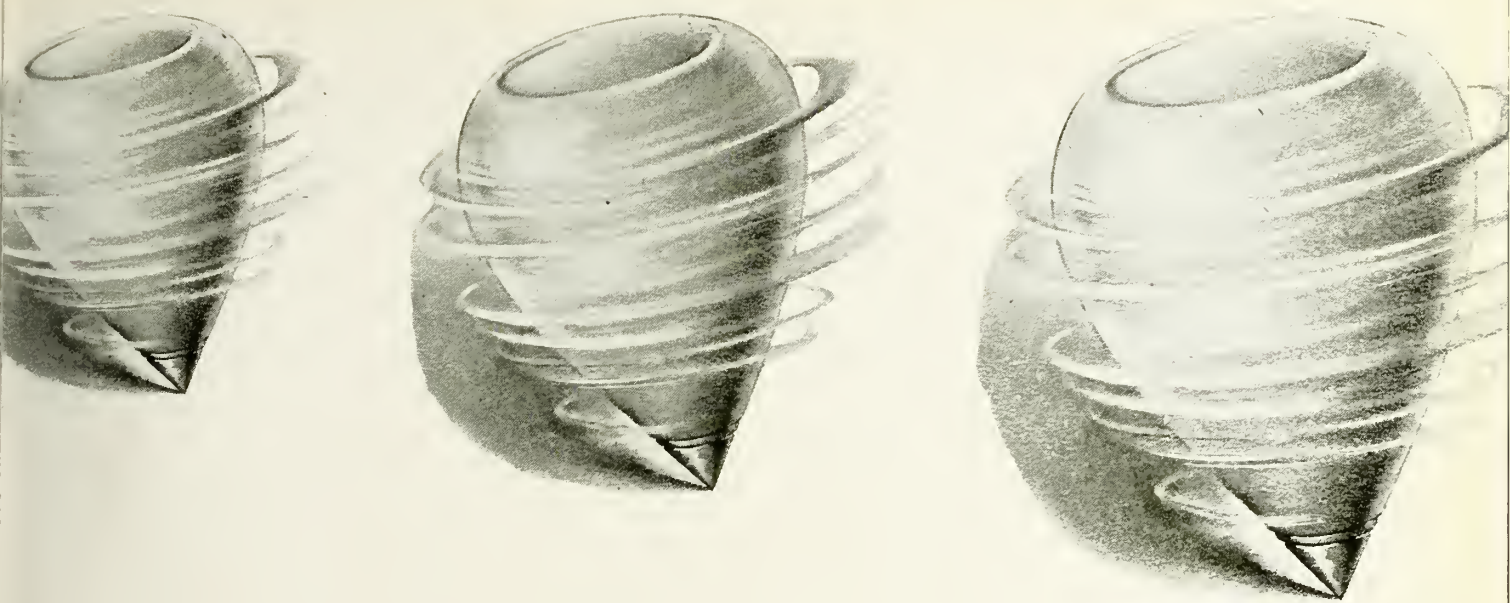
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Vol. 9

Hollywood, December, 1937

No. 11

Contents

ON THE COVER. Hollywood's famed tin Christmas trees in photo-montage by Paul Allen. See Page 9. Night scenes were photographed on Agfa Superpan Press.

TRADEWINDS 5-6-7-8

News of New Products.

CAMERA 9-10-11-12-13-14-15-16-17

Agfa Press Film

Effect Filters

Newsreelers in China

Cinematographer's Book of Tables—Westerberg

Kine Exakta Single Lens Reflex

PROCESS 18-19-20

Roach's Mr. Young

LIGHTING 21-22-23-24

Technicolor Covers Steel

SOUND 24-25-26-27-28-29

New Sound Track Standards

NEW PATENTS 29-30

LABORATORY 30

Laboratory Book of Tables—Allison

PROJECTION 31

Richardson on Standard Aperture Change Fight

CLASSIFIED DIRECTORY 31-32

Editor, ED GIBBONS; Managing Editor, HERBERT ALLER; Art Editor, JOHN CORYDON HILL; Business Manager, HELEN BOYCE.

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International PHOTOGRAPHER

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Vol. 9

No. 11

Tradewinds

News of New Products

Change in editorial policy—in organization several months—consolidates news of new items under one heading as service to manufacturers and readers.

With this issue International Photographer gets under way on a new approach to news of new products and materials available to the motion picture and allied industries. Organized systematically, this information will in the future appear under the heading, "Tradewinds," which in the past has covered general news of new ideas as well as feature news topics. These latter items from now on will appear under specific department headings.

During the past month, several thousand blanks, with space for noting the pertinent facts about new products and materials were sent to manufacturers and distributors. The following items are but the early returns from this first series. With the view in mind that the first function of a technical trade journal is to present concise news of new developments in the trade, we are looking forward to this department assuming an important place in International Photographer, as a service both to the manufacturers and to the users of materials in the photographic and motion picture fields.

A point to be noted is that during the first few months of getting this program under way, obviously, some of the items reported on will not be startlingly new, as many manufacturers will desire to have cited for the record items which have been on sale for some months.

This new system will, of course,

transfer much news material, which previously has appeared under other headings, such as "Camera," "Sound," "Laboratory," etc., to "Tradewinds." During some months certain sections will be dropped for lack of news-worthy material other than information on new products.

In conjunction with this program International Photographer in the future is dropping all types of stories except the following:

- 1) Authoritative technical articles by recognized staff members of manufacturing companies, dealing with the functions and qualities of their products:

- 2) Similar articles by recognized members of the International Alliance of Theatrical Stage Employees or important studio figures in the fields of photography, sound, laboratory, practice, lighting, settings, props, makeup, projection, etc.

- 3) Informative news stories by the International Photographer staff about the work and accomplishments of the above-mentioned groups.

It is believed that this editorial program will most adequately serve International Photographer's readers, since it is based upon a study of the various classifications in that group, of which a wide majority consists of professional workers in photography, sound, studio backlot technical crafts, projection, commercial motion and still pic-

ture making, studio and manufacturing executives both here and abroad, advertising and graphic arts executives, and higher type skilled amateurs in both motion picture and still photography.

While International Photographer welcomes the reading interest and the questions or suggestions of amateur photographers, lack of space prevents devoting much consideration to out-and-out amateur matters. Also, there are at present many publications catering to that field, while International Photographer is the only technical trade journal catering to all branches of the professional end of cinema and still photography and their allied arts and crafts. As good business and sound editorial judgment, International Photographer has a prior obligation to serve this majority first.

A signally important feature of this new editorial policy, which has been in the process of organization for several months, is that any manufacturer filling out a "New Product" blank is entitled to forward to International Photographer a sample of his product, which will be used under actual professional production conditions by a qualified member of the International Alliance or one of our staff of contributing experts, and a news report by the technician so assigned will be published in the magazine. We believe that this feature of our "Technical Jury" program should be productive of a host of interesting and valuable stories during the coming year.

In general, our hope is that this new setup will eliminate all deadwood material from the magazine and insure its living up to its high aim of providing an honest, informative and readable journal of the technical phases of photography and motion picture production, and the arts and crafts in which the members of the International Alliance play so vital a part, as well as a friendly link between the technicians and the manufacturers of the products they use each day.

News of the new products starts on the next page.



Two products from Beattie's Hollywood Hi-Lite Co., a division of the well-known Hollywood light organization, headed by Otto K. Olesen. Above is the Boom-Lite intended as a flexible source of light in portrait studios, and at right is the Hi-Key Spotlight, which has a 1000-watt lamp, and while originally intended for the still studio, has also been used by motion picture photographers for lighting close-up scenes. (Col. 1, Page 6.)

LIGHTING

NAME OF PRODUCT: Boom-Lite.

MANUFACTURER: Beattie's Hollywood Hi-Lite Co. (Div. of Otto K. Olesen Co.), 1560 N. Vine St., Los Angeles, Calif.

DISTRIBUTOR: Sold direct.

GENERAL DESCRIPTION: An extra flexible source of hard light, putting a vignetting beam (or sharp circle) of light exactly where wanted from floor level to 12 feet high. Intended primarily for top lighting in the portrait studio, the Boom-Lite is considered an excellent main source by many photographers making publicity portraits. Excellent too for backlighting from unusual angles.

SPECIFICATIONS: Counter-balanced boom-arm extends to 5½ feet from center of stand. Focusing lamphead equipped with new C. P. mazda, takes 400 watts, delivers 750 as measured by ordinary standards. Ready Soon: A

new model, identical with above, except for lamphead which will take the standard 1000 watt globe, or the new C. P. mazda of 1000 watts. Probable price, \$85.

PRICE: \$68, complete with special C. P. 400 watt globe.

NAME OF PRODUCT: Hi-Key Spotlight.

MANUFACTURER: Beattie's Hollywood Hi-Lite Co. (Div. Otto K. Olesen Co.), 1560 N. Vine St., Los Angeles, Calif.

DISTRIBUTOR: Sold direct.

GENERAL DESCRIPTION: Radically new in design and ability, this spotlight produces a vignetting beam, or a sharp, clean circle at option of operator. Originally intended for service in the still studio, it is being received with considerable favor for use in close-ups

with the motion picture camera. Extremely flexible, the lamphead raises from floor level to ten feet in height, turns and tilts to every conceivable angle, focuses from a broad flood to a narrow beam. Powered by a new C. P. mazda, consuming 1000 watts, producing power equivalent to 1750 watts as measured by ordinary standards. General Electric claims an almost perfect spectrum distribution for this new globe, a statement which appears to be borne out in practice with Dufay and other direct color processes.

SPECIFICATIONS: Built almost entirely of feather-weight alloys, yet sturdy enough to stand the most severe handling. Finished in patented aluminite—beautiful and imperishable.

PRICE: \$85, including special globe.

CINEMATOGRAPHY

NAME OF PRODUCT: Thalhammer "Follow-Focus" Photoflood Attachment.

MANUFACTURER: The Thalhammer Company, 121-123 South Fremont Avenue, Los Angeles, Calif.

DISTRIBUTOR: Sold direct, dealers.

GENERAL DESCRIPTION: A collapsible device for attachment to any tripod or camera with the feature that the lighting automatically follows the camera field of view movement, whereas separately mounted photofloods require new setups with each change of scene. The attachment is extremely portable and its simplicity of operation makes it valuable for home and indoor photography with 16 or 8 mm. cameras. The dural metal reflectors come off flat and are attached by means of a simple patented device.

SPECIFICATIONS: Two dural metal reflectors provide for a lamp on each side of camera. Can be adjusted as close to camera as desired or to maximum spread of 70". Over-all length when closed 21". Made of wood and dural.

PRICE: \$16. (Special introductory price of \$12.50 until December 31, 1937.)

NAME OF PRODUCT: Noris Super Supris D. C. carbons.

MANUFACTURER: C. Conradty, Nuremberg, Germany.

DISTRIBUTOR: Noris Carbon Company, Inc., 160 Fifth Avenue, New York, N. Y.

GENERAL DESCRIPTION: These are the only extra diameter, extra length Suprex type carbons on the world market at the present time. Up to this time the total length of Suprex type positives has been 12 inches. These new carbons are really radical, since for the first time a coppered trim of this type has been put on the market which will produce, on 75 to 100 amperes, almost as much light as a high intensity 13.6 mm. carbon trim puts out. The superiority of these carbons over standard Suprex carbons is particularly evident when color pictures are projected.

SPECIFICATIONS: Noris Super Supris D.C. 9 mm.x20-inch cored and coppered Positive; Noris Super Supris D.C. 7 mm.x9-inch cored and coppered Negative.

PRICES: (Upon application.)

FILM EDITING

NAME OF PRODUCT: B & H 8mm. Film Editor.

MANUFACTURER: Bell & Howell Co., 1848 Larchmont Ave., Chicago, Ill.

DISTRIBUTOR: Sold direct, dealers.

GENERAL DESCRIPTION: A new machine offering speed, convenience and accuracy in editing 8mm. film. Film viewer gives brilliant magnified image about 1½" wide and is amply shielded from room light. Film scratching virtually impossible.

SPECIFICATIONS: Geared rewinders at each end of base permit winding film in either

direction. Accommodate 8mm. reels only, up to 200-foot capacity. Splicer similar to Model 136, can be used also for splicing 16mm., silent or sound, as well as 8mm. Makes the Bell & Howell diagonal splice. Dry Scraper block and film cement bottle conveniently situated at base.

PRICE: Complete Film Editor, \$33; Rewinder and Splicer (without film viewer), \$20.

PHOTOGRAPHY

NAME OF PRODUCT: Morgan Gadget Bag.
MANUFACTURER: Morgan Camera Shop, 6305 Sunset Blvd., Hollywood, Calif.

DISTRIBUTOR: Sold direct.

GENERAL DESCRIPTION: A durable, handy bag for carrying camera, photometer, extra lenses, film, and other accessories. Designed especially for the miniature camera but will accommodate others not too large. Special feature is top closure, which makes the bag easily accessible without danger of contents falling out.

SPECIFICATIONS: Genuine top grain leather, very flexible, in black or brown. Copious main compartment with three pockets, large center pocket for camera. Rain-proof zipper closure top. Adjustable shoulder strap. Approximate space inside without stretching: 11"x7"x3".

PRICE: \$10.

NAME OF PRODUCT: Superflash No. 3.

MANUFACTURER: Wabash Photolamp Corp., 335 Carroll St., Brooklyn, N. Y.

DISTRIBUTOR: Sold direct, dealers.

GENERAL DESCRIPTION: New professional flash bulb designed especially for distance, large area, high speed action shots in news and commercial photography. Makers state they believe it is first and only bulb made for use with large professional focal plane shutter cameras of Graflex type. Also improved color quality brings filter factors to minimum, is suited to sensitivity of new pan films and well adapted to natural color photography.

SPECIFICATIONS: Patented finely fluffed Superflash lighting element of one continuous length of hydronalium wire allows all the light developed to be delivered for 100 percent illumination value, with greater power to penetrate distance and cover larger areas. Flash is longest at its brightest point, with total illumination of approximately three times the Superflash No. 2, already used successfully for small focal plane shutter cameras. Convenient size, half that of average bulb. Blue safety spot turns pink if bulb becomes imperfect.

PRICE: \$0.60.

NAME OF PRODUCT: FoTimer (New High Accuracy Exposure Meter).

MANUFACTURER: Bickley Manufacturing Company, 19 Penarth Road, Bala-Cynwyd, Penna.

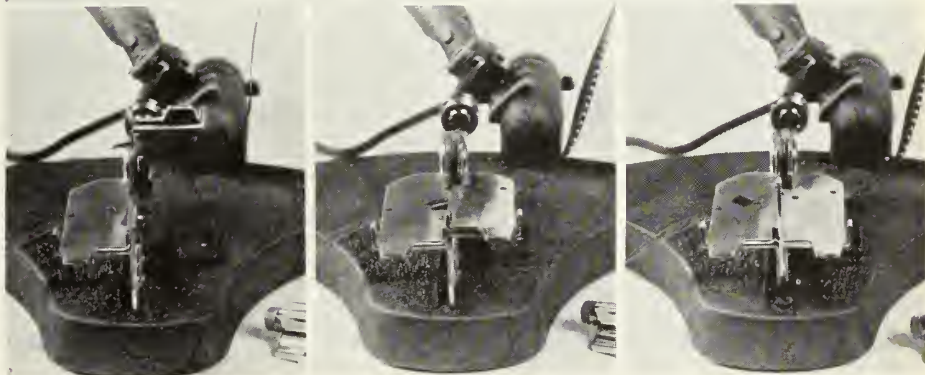
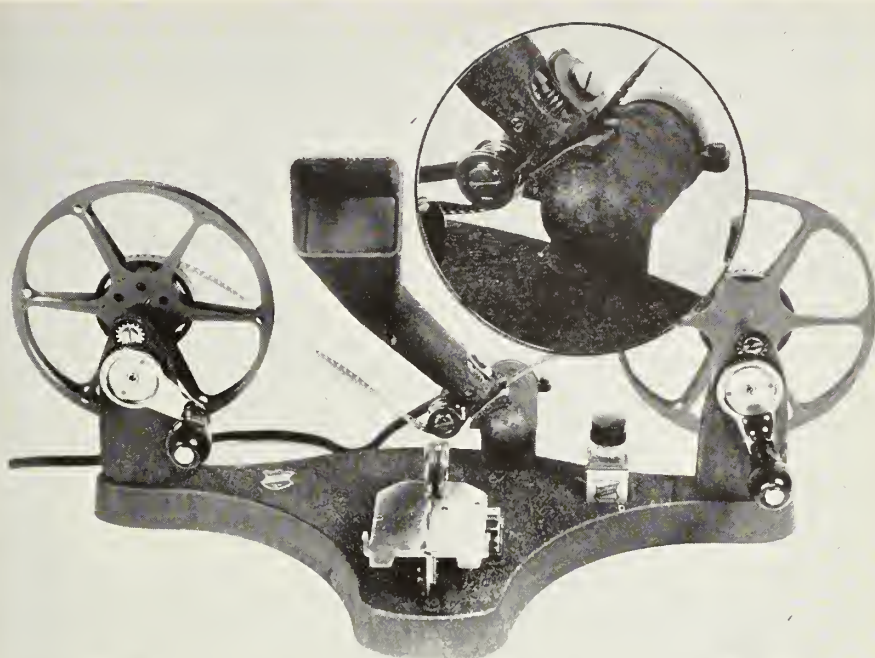
DISTRIBUTOR: George Murphy, Inc., 57 E. 9th St., New York City.

GENERAL DESCRIPTION: Manufacturer states: "The FoTimer tells correct exposure with any subject, under any condition, at any time, under any light. It gives beautiful negatives exposed for detail in the shadows, with compensation for reduction on speed shots. Excellent for day outdoor pictures, day indoor pictures, night pictures, angle or vertical shots, movie shots and night street scenes. Simple to use, quick to operate, compact, self contained, reliable, durable. Indispensable to users of high speed cameras."

SPECIFICATIONS: Size 3" x 5½" x 1/16" thick. Weight less than an ounce. Made of brilliant celluloid, internally printed. Packed in envelope with instructions, brief instructions on back of device. No accessories necessary. Made in models depending on location. Model 40N for U.S.A., Model 55N for Canada, Great Britain, etc.

PRICE: \$1.00 postpaid.

NAME OF PRODUCT: Kodak Retina II.



Above is shown Bell & Howell's new 8 mm. film editor, showing the complete setup in top strip with close-up in circle of the film viewing arrangement. Strip series illustrates operation of the splicer, which can accommodate 16 mm. film as well as the 8 mm. Splicer setup is identical with the familiar Model 136, and makes the Bell & Howell diagonal splice. (Col. 3, Page 6.) At right is the Gadget Bag, marketed by the Morgan Camera Shop in Hollywood for candid camera enthusiasts. It's handy and roomy, has top zipper closure. (Col. 1, Page 7.)



MANUFACTURER: Eastman Kodak Company, Rochester, N. Y.

DISTRIBUTOR:

GENERAL DESCRIPTION: The familiar Retina makes its appearance in a more expensive model with direct view finder and coupled range finder, plus faster lenses. Other features are prevention of double exposures, exposure-count dial, lever controlling clutch for forward and reverse winding, plus brake lever for rewind knob, and body shutter release. Three supplementary lenses available for close-up work.

SPECIFICATIONS: Two models available, identical except for lenses, f.2.8 and f.2.0.

Prices include tan leather case with neck strap. Camera case and back are of die-cast aluminum alloy, covered with black leather. Exposed metal parts are in satin finish chromium and black metal. Couples range-finder built in. Compur-Rapid shutter to 1/500.

PRICES: With f.2.8 lens, \$115; with f.2.0 lens, \$140.

NAME OF PRODUCT: Superpan Press Cut Film.

MANUFACTURER: Agfa-Ansco Corporation, 29 Charles St., Binghamton, New York City.

DISTRIBUTOR: Agfa-Ansco Corporation.

GENERAL DESCRIPTION: A new high

speed panchromatic type cut film that has a light intensity *four times* greater than heretofore maximum speed materials. Superpan Press requires but $\frac{1}{4}$ the exposure formerly necessary, therefore may be used with lens openings two stops smaller. Weston ratings have not as yet been issued, however satisfactory results can be obtained by using $\frac{1}{4}$ the exposure usually given films using a Weston setting of 24 or a Scheiner rating of 23°. Superpan Press has a panchromatic color sensitivity which, with the exception of being slightly higher in the red, is comparable with regular Superpan emulsions. Although offering a tremendous increase in speed Superpan Press loses none of the characteristics such as fine grain, brilliant gradation and keeping qualities that is noted in the regular Superpan negative products.

SPECIFICATIONS: Superpan Press film is manufactured in the following cut film sizes: $3\frac{1}{4} \times 4\frac{1}{4}$ —4x5—5x7—8x10.

PRICES: $3\frac{1}{4} \times 4\frac{1}{4}$, 95c per dozen; 4x5, \$1.25 per dozen; 5x7, \$2.00 per dozen; 8x10, \$4.45 per dozen.

NAME OF PRODUCT: Kalart Micromatic Speed Flash.

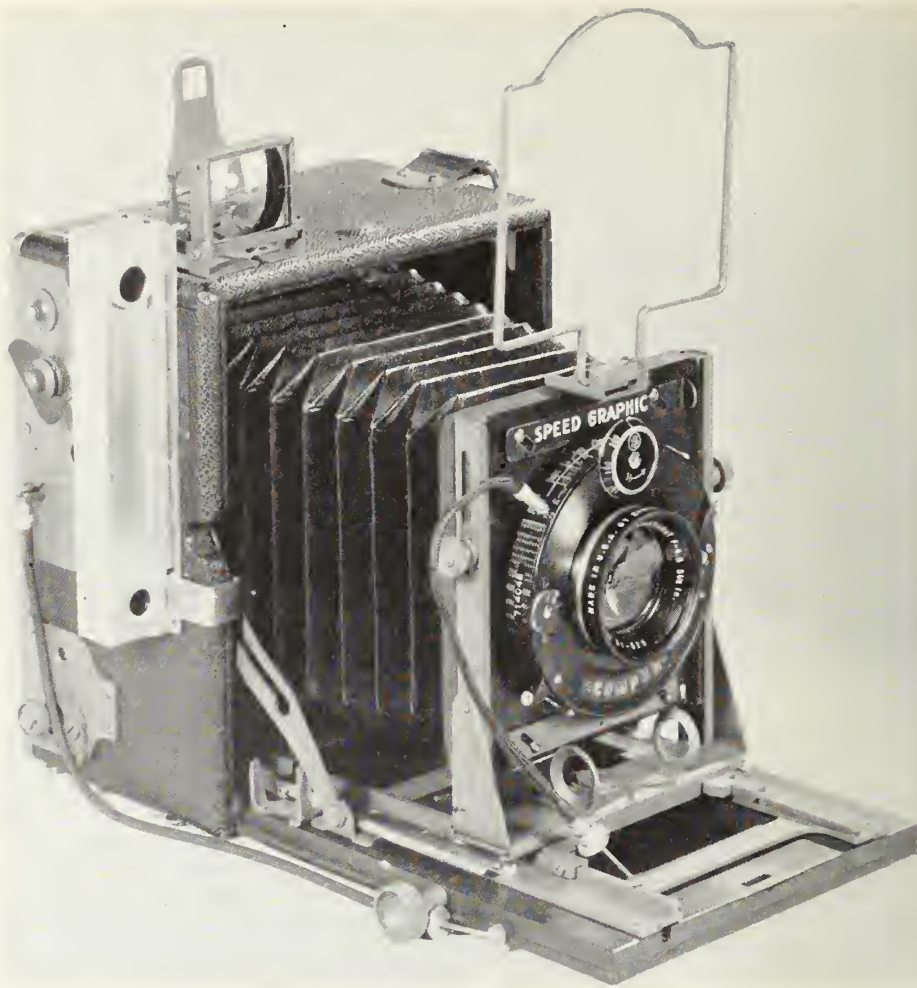
MANUFACTURER: The Kalart Company, 58 Warren St., New York City.

GENERAL DESCRIPTION: The Kalart Micromatic Speed Flash will work interchangeably with all Compur shutters, national Graflex, Contax and Leica. It is adjusted by a turn of the milled tension knob on the synchronizer. It is the only photoflash synchronizer with micrometer adjustment for time delay to one thousandth part of a second. This hair line timing makes it possible to accurately adjust the synchronizer for all makes of flash bulbs as well as for individual shutter operating characteristics.

SPECIFICATIONS: The standard units consists of Kalart micromatic synchronizer, bakelite $4\frac{1}{2}$ volt battery case with plug-in terminals and 6-inch chrome reflector; Kalart micromatic synchronizer, 9 volt battery case, 7-inch reflector.

PRICES: With $4\frac{1}{2}$ volt battery case, \$13.50; with 9 volt battery case, \$16.00.

NAME OF PRODUCT: Revolving Back $2\frac{1}{4} \times 3\frac{1}{4}$ Speed Graphic.



New $2\frac{1}{4} \times 3\frac{1}{4}$ Speed Graphic with revolving back.

MANUFACTURER: Folmer Graflex Corp., Rochester, N. Y.

DISTRIBUTOR: Sold direct.

GENERAL DESCRIPTION: New Speed Graphic features economy and versatility

through smaller picture size and revolving back. Latter feature allows taking horizontal or vertical pictures with equal facility with a touch of the finger without changing position of camera. When equipped with coupled range-finder and photoflash synchronizer it permits a wide picture-making range, either day or night.

SPECIFICATIONS: Has all standard features of regular Speed Graphic in addition to features cited above: focal plane shutter, long bellows draw, eye-level view finder, wire frame finder and peep-sight, rising and falling front, removable lensboard and interchangeable lenses either in barrel or mounted in between-the-lens shutters for photoflash work.

PRICE: \$80, without lens.

LABORATORY

NAME OF PRODUCT: Allison-Bristol pH Recorder.

MANUFACTURER: Bristol Co., Waterbury, Conn.

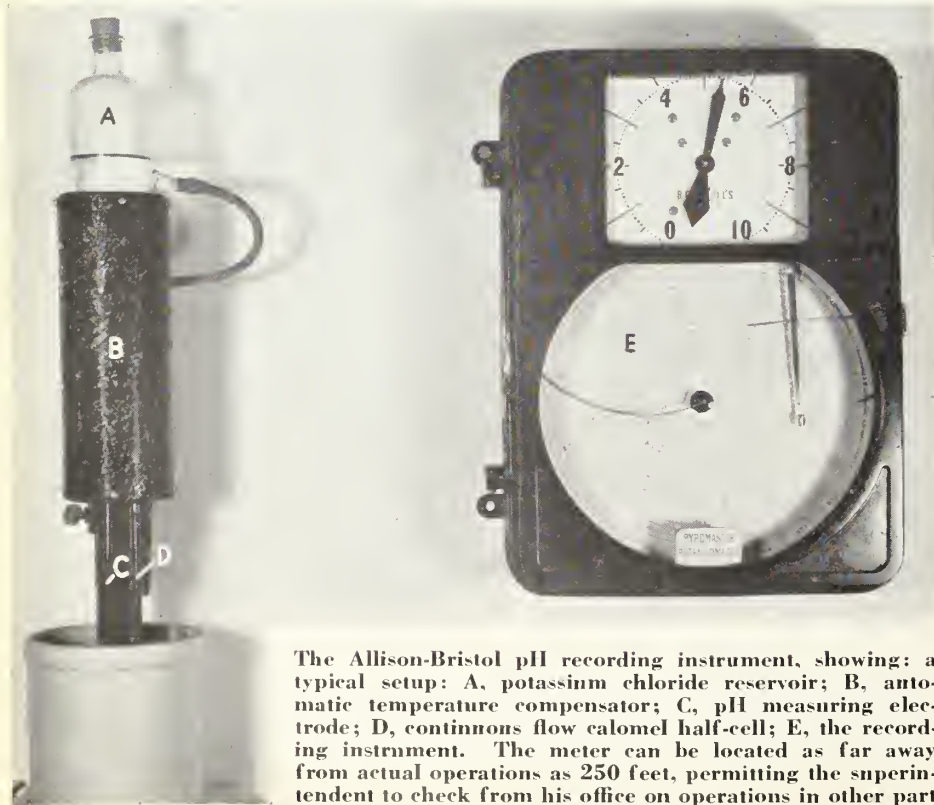
DISTRIBUTOR: Standard pH Meter Co., Beverly Hills, Calif.

GENERAL DESCRIPTION: For modern laboratory recording and control of film processing solutions. Fully and automatically compensated for solution temperature, it insures very accurate pH measurements. The recorder is entirely free from rotating or oscillating parts and potentiometer operation is entirely electrical. Instrument is not affected by the severest vibration.

SPECIFICATIONS: Supplied in ranges pH 1 to pH 7, pH 6 to pH 12, and pH 0 to pH 10. Dimensions of recorder: $6'' \times 12'' \times 18''$. Moisture, fume and dust-proof gasketed case.

PRICE: \$400, complete with measuring electrode, calomel half-cell and all necessary accessories.

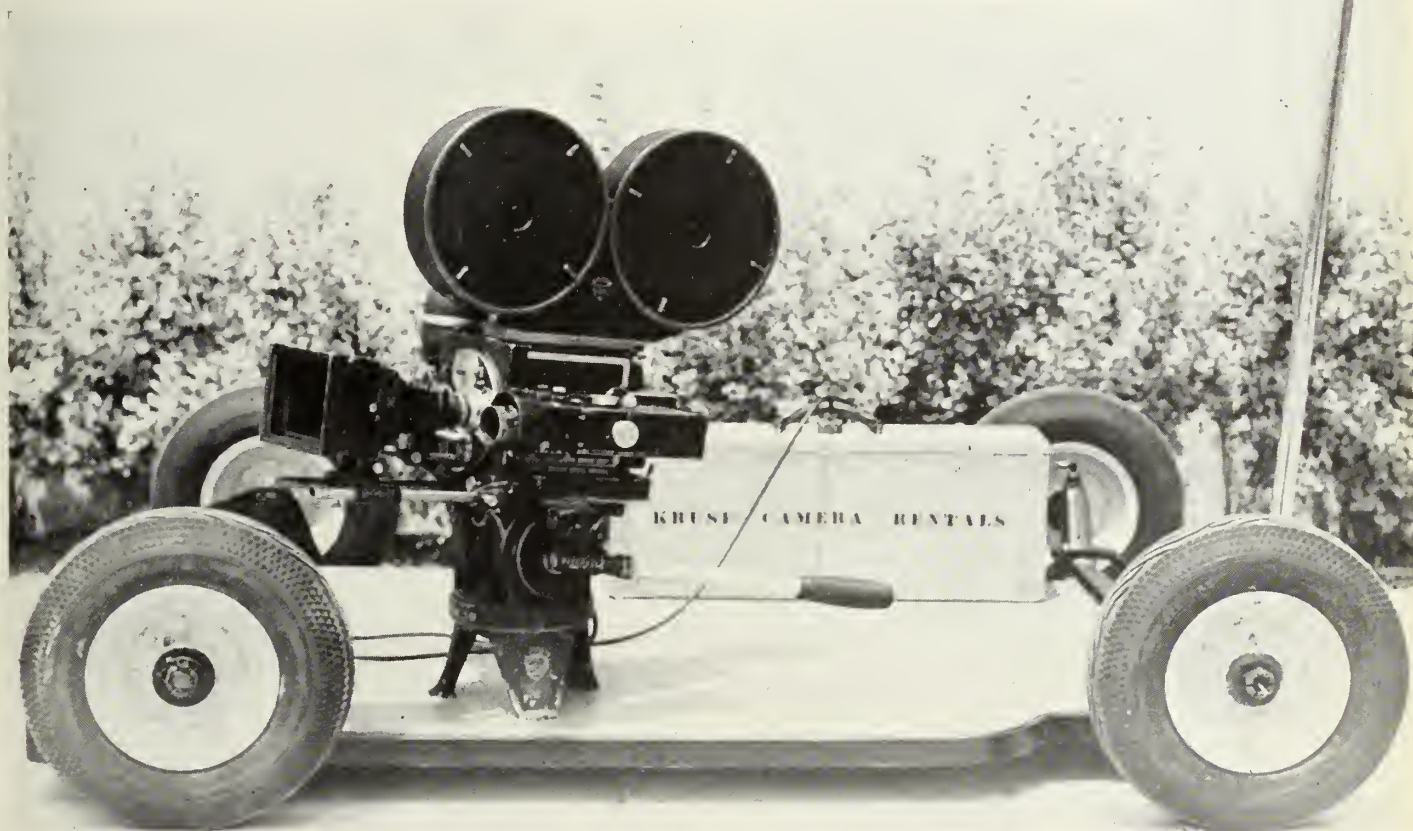
MODEL NUMBER: 440-M.



The Allison-Bristol pH recording instrument, showing: a typical setup: A, potassium chloride reservoir; B, automatic temperature compensator; C, pH measuring electrode; D, continuous flow calomel half-cell; E, the recording instrument. The meter can be located as far away from actual operations as 250 feet, permitting the superintendent to check from his office on operations in other part of the building.

Camera

LOWEST DOLLY available for novel photographic effects is in regular service in the studios by Camera Rentals organization, operated by Henry Kruse, member of Local 659, IATSE. It permits the base of the tripod head to be but 3½" off the ground. Tongue-steered by the front wheels, and reversible, it permits unusual shots from very low angles in motion. In addition to its extreme portability, the dolly can be lifted conveniently by two men and easily stacked in a studio truck, where it occupies little space.



Agfa Press Film

Cover montage illustrates speed and photographic qualities of new Superpan Press cut film.

The December cover of International Photographer illustrates the type of results obtained under adverse conditions with Agfa's fast new Superpan Press cut film. The montage of Hollywood's "Santa Clause Lane" was composed by Paul Allen from selections out of two dozen shots taken with a "four-by-five" standard newspaper Speed Graphic with f:4.5 lens wide open at a speed of 1/25 second. Only exception is the large Christmas tree, which was shot at 1/5 second but was so over-exposed that it was held back a great deal during the montage printing.

Other good shots, all well-suited to engraving reproduction, were obtained in addition to those shown in the cover montage from the two packages of film used. One film out of the two dozen failed to record a reproduceable scene. In no instance were flash-bulbs or any other light used than that afforded by street and shop-window illumination.

Of particular interest is the depth of focus obtained. Scenes in the cover montage had much more action which was lost in photo-composition and air-brushing.

Effect Filters

Facts and suggestions on a significant topic by George H. Scheibe, Hollywood photo filter specialist.

Under the general heading of Effect Filters we find many types of screens for producing diffused or soft-focus effects: Fog Filters for producing the effects of fog; Neutral Density filters; Graduated Color or Neutral Density filters for producing special filtered effects or transitions; special filters for controlling the projection "hot spot" in background-projection process cinematography; a variety of Iris-Vignettes; and even the familiar Monotone Filter, which is a true filter in spite of the fact that it is used only visually.

Without doubt today the most universally used motion picture photographic filter is the Diffusing Screen. Hardly a scene now is photographed—either in the studio or on location—

without the use of some type of Diffusing Screen. In fully half of these scenes, the diffusion is so delicate that it is noticeable only to the trained technician; yet it is the presence of this all-but-imperceptible diffusion which is responsible for the charm, naturalness, and quality of modern studio cinematography.

Diffusing Screens have been devised to delicately soften the image cast by the lens, obscuring defects, and giving a satisfyingly natural picture without sacrifice of any of the essential characteristics of the lens—its speed, correction, and general quality. In studio practice, these screens smooth out facial wrinkles, banish flaws in make-up, and make the picture generally more pleasing.

Commercially, Diffusing Screens are made in a number of grades, giving effects ranging from the very slightest to the heaviest permissible softness. The basic number of the series—No. 1 gives a moderate degree of diffusion. No. 2 gives a heavier diffusion and No. 3 an extreme softness suited as a rule only for extreme close-ups. For many years these three were ample for all needs; but of late, lighter and yet lighter



NEWSREELERS IN CHINA. From Eric Mayell, 659, IATSE, comes these shots of "sitting in on an undeclared war." Mayell says: "It's quite a relief to be in a war where you are only dodging bombs and whatnot occasionally, instead of living in Los Angeles, where you are dodging sudden death from automobiles all the time." Above, Mayell points out what happened to his car when he parked it outside the Central Hospital in Nanking. Top right, the cameramen's "foreign legion": left to right, Winner, Universal; Mayell, Movietone; Menken, Paramount; "Newsreel" Wong, Hearst; Krainukov, Universal. Norman Alley of Universal, and Earl Nelson and Joe Rucker of Paramount, arrived too late to get in this picture. Lower right, Mayell interviews Generalissimo and Madame Chiang Kai Shek. Note the predominance of Bell & Howell Eyemos used by the newsreelers.



screens have been demanded. Many famous cinematographers use one of these lighter screens for all scenes, applying heavier ones only for close-ups—and never working without a diffuser.

Users of 16 mm. cameras will find lighter gradation extremely beneficial to their camerawork, though the magnification in projection, together with other considerations of optics, film characteristics, etc., preclude the use of anything heavier than $\frac{1}{8}$ diffusers. Users of miniature cameras will find diffusers very useful, too, in making their enlargements. Several 35 mm. still photographers have told me that the use of a No. 1/128 diffuser on the lens of the enlarger when making big enlargements tends to minimize the grain-effect so injurious in this work.

Another valuable group are the Fog Filters. These produce natural fog effects under any condition. The No. $\frac{1}{8}$ and No. $\frac{1}{4}$ stimulate atmospheric haze or mist; the No. $\frac{1}{2}$ a very light fog; the No. 1 light fog; the No. 2 a medium fog; the No. 3 a heavy fog; the No. 4 a real "London Fog." The No. 5, a graduated fog-filter, is often used for cinematographic work, especially street scenes. These filters (especially the first four) do not increase the ex-

posure, and they may be used at night. In fact, the first of these filters which I made, nearly twenty-two years ago, gave a night fog effect when a natural fog failed to make any photographic impression. These Fog Filters are also excellent for use in photographing backgrounds for art titles.

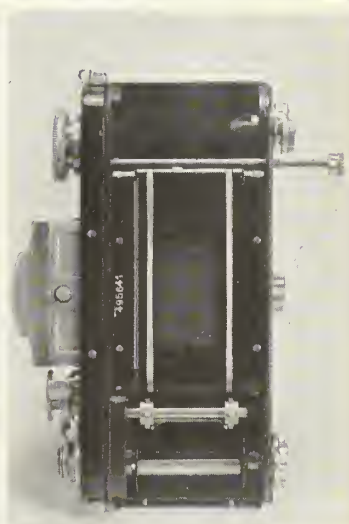
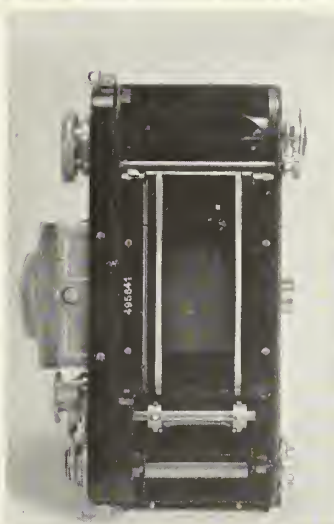
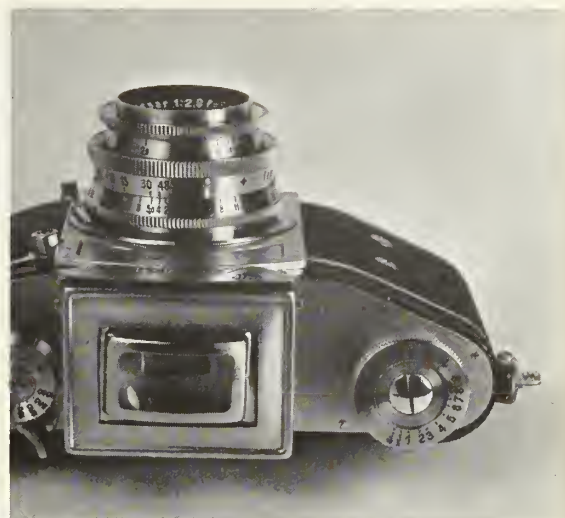
Neutral Density filters for subduing glare and strong contrasts, are too well known to require more than mention. They may be obtained in graduated types, which are very useful. Several miniature experts use these graduated neutral density filters on all their miniature shots. Ordinary graduated filters, graduating from either clear or very lightly-tinted glass at one end to a heavy tint at the other, are very familiar. Made graduating from one color to another, as from yellow to orange, or from orange to red, they are highly useful in making night and moonlight shots. Several cinematographers have had special filters made, graduated from green of the 56b or X below to 25a above; these produce startling effects in the desert with highly-corrected sky and a soft foreground.

I have made special filters of this type which have produced some interesting special effects. In the Fox picture "Happy Days" a few years ago, a sequence required that a group of minstrels should change suddenly from normal white men to blackface make-up. This was done by using a bluish-grey make-up, and a long, graduated filter, clear at one end, and a fairly heavy

red at the other. When shooting through the clear end, the make-up photographed white; and pulling the filter down until the lens was covered by the red end, the bluish make-up slowly changed to black. A similar filter enabled another cinematographer to quickly transform an old man into a youth; the aging lines were drawn in blue, which, through the red filter photographed dark; pulling the filter down until the lens was behind the clear area, the blue lines faded out, and the old man became young. Another filter made lately for Metro-Goldwyn-Mayer Studios caused clouds to drift across a scene as naturally as one sees them.

Lastly, the Monotone Filter—or viewing glass—is a filter for the eye, not for the camera. It is used in judging photographic light-values, showing highlight, shadow, and colors in terms of black and white and halftone. They are made for both Pan and Ortho emulsions.

For projection background sequences a very valuable and comparatively new filter is the Hotspot Iris which is used in front of the projector. It will entirely eliminate the hotspot in the center of the projector. It is made in small circles in the center of a 6"x6" glass and can be moved out or in from the projector so it will cover the hotspot evenly. Made in neutral color it becomes part of the screen and is not noticeable. All studios and most projection background effects organizations now use the Hotspot Iris as an



THE KINE EXAKTA SINGLE LENS REFLEX CAMERA. Top strip shows camera from above, open and closed. Note enlarging mirror, which snaps down easily over the ground glass composition screen. Lever at left controls shutter cocking, frame change and exposure count with one operation. Double exposure is impossible. Knob at left controls fast speeds, time and bulb of focal plane shutter up to 1/1000 second. Knob at right controls time exposures and permits delayed shutter action, allowing photographer time to get into self-photograph. Center strip shows camera from front, with standard $f:2.8$ lens in bayonet mount. Shutter release is at left of lens mount and

slightly above it. Built-in connection sockets for flash bulb work are visible in camera's right front panel. Picture at right with lens removed shows the reflecting mirror in position to throw the identical image the film will receive, up to the viewing ground glass. Bottom strip shows at left the $f:4.5$ 120 mm. focal length lens, particularly suited for portrait and distance photography, in position in bayonet mount, also the leather neck-strap with a locking nut on its spring clasp, which is a valuable safety item. Two shots at lower right illustrate the special built in knife used when it is desirable to remove a portion of the roll of exposed 35 mm. film, but without taking the balance of the film out of the camera.

The CINEMATOGRAPHER'S BOOK of TABLES

By Fred Westerberg

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FREQUENCY OF LIGHT WAVES

WAVE LENGTH CONVERTED TO FREQUENCY

WAVE LENGTH IN MILLIMICRONS							
300	400	500	600	700	800	900	
FREQUENCY IN CYCLES PER MILLION MILLIONTH OF A SECOND							
00	999.4	749.5	599.6	499.7	428.3	374.8	333.1
05	983.0	740.3	593.7	495.6	425.3	372.4	331.3
10	967.2	731.3	587.9	491.5	422.3	370.1	329.5
15	951.8	722.5	582.2	487.5	419.3	367.9	327.7
20	936.9	713.9	576.6	483.6	416.4	365.6	325.9
25	922.5	705.5	571.1	479.7	413.5	363.4	324.1
30	908.5	697.3	565.7	476.0	410.7	361.2	322.4
35	895.0	689.2	560.4	472.2	407.9	359.1	320.7
40	881.8	681.4	555.2	468.5	405.2	356.9	319.0
45	869.0	673.8	550.1	464.8	402.4	354.8	317.3
50	856.6	666.3	545.1	461.1	399.7	352.7	315.6
55	844.6	658.9	540.2	457.7	397.1	350.7	313.9
60	832.8	651.8	535.4	454.3	394.5	348.6	312.3
65	821.4	644.8	530.7	450.9	391.9	346.6	310.7
70	810.3	637.9	526.0	447.5	389.6	344.6	309.1
75	799.5	631.2	521.4	444.2	386.9	342.7	307.5
80	789.0	624.6	516.9	440.9	384.4	340.7	305.9
85	778.8	618.2	512.5	437.7	381.9	338.8	304.4
90	768.8	611.9	508.2	434.5	379.5	336.9	302.8
95	759.0	605.7	503.9	431.4	376.3	335.0	301.3

Based on speed of light of 299,820 meters per second.

SHUTTER DATA

Camera Speed In Pictures Per Second	R. P. M. of Shutter	Time In Seconds One Shutter Revolution	Shutter Opening In Degrees	Per Cent of Time Shutter Is Open	Per Cent of Time Shutter Is Closed
1	60	1.000	240	66.7	33.3
2	120	.500	230	63.8	36.2
3	180	.333	220	61.1	38.9
4	240	.250	210	58.3	41.7
6	360	.167	200	55.6	44.4
8	480	.125	190	52.8	47.2
10	600	.100	180	50.0	50.0
12	720	.083	170	47.2	52.8
14	840	.071	160	44.4	55.6
16	960	.062	150	41.7	58.3
18	1080	.056	140	38.9	61.1
20	1200	.050	130	36.1	63.9
22	1320	.045	120	33.3	66.7
24	1440	.042	110	30.6	69.4
32	1920	.031	100	27.8	72.2
36	2160	.028	90	25.0	75.0
48	2880	.021	80	22.2	77.8
64	3840	.016	70	19.4	80.6
72	4320	.014	60	16.7	83.3
96	5760	.010	50	13.9	86.1
128	7680	.008	40	11.1	88.9
144	8640	.007	30	8.3	91.7
192	11520	.005	20	5.6	94.4

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GEORGE H. SCHEIBE.

Pictures by Wire

Highlights in transmission of news pictures illustrated from Los Angeles photographer's collection.

The closest technical connecting link between the motion picture industry and modern journalism is flashing of news pictures across the continent by electrical impulses. The technique employed stems from modern sound recording practice, and is one of the bridging steps in the eventual progress toward practical television. Today the major photographic news services all have their "Telephoto" (Acme), "Wired Photo" (Wide World), "Wirephoto" (Associated Press), "INP Sound Photo" (International News Service), and "Phone Photo" (Register and Tribune Syndicate).

Marking the great progress made in conquering time and space is the transmission today with excellent results of a news picture in approximately seven minutes, against the crude reproductions obtained in the early 20's in five to seven hours.

First practical transmission of news pictures over great distances was done by the "Telephotographer," an ingenious device concocted by Ralph Trueblood, then managing editor of the Los Angeles Times. A cleverly designed board was used at both ends. A code which could be telegraphed was worked out by the sender from the lines and shadings of the original picture, and a closely similar copy was obtained by reversing the process in decoding at the other end.

Today the variable density of a narrow strip of a picture is transmuted into sound waves by adaptation of the sound recording light cell method and by revolving the picture similarly to a Dictograph record, the entire picture is transmitted bit by bit.

A news picture veteran in Los Angeles is George R. Watson, manager of the local bureau of the Acme service, and well-known in the film colony. Over 15 years ago, Watson became interested

in the picture transmission idea and began collecting facts and pictures on the subject. Outstanding items from his collection, reproduced herewith, illustrate the high-spots from the make-shift code system to modern transmission of spot news pictures.

Watson made the first picture ever transmitted eastward in regular service, a court scene with Attorney Jerry Giesler questioning Kid McCoy on the witness stand. The system was Pacific & Atlantic's "Telepix." A copper plate (see page 16) was made for transmission purposes, where today an ordinary print is satisfactory.

The Acme organization holds a leading position in the field today by virtue of an unusually efficient and portable transmitting machine, which can be operated through any good telephone connection. A distinct feature of their system is that there is no direct wire connection at either end; instead, an induction coil is placed against the phone box. The present Acme field instrument fits into two cases, each slightly larger than a portable typewriter case. The company is working on an even more efficient and compact instrument, to be brought out next year.

When the photographer in the field has hooked on his transmitter and received a clear line into the receiving station, he fastens the print around a roll, which faces a light-sensitive cell. The print is held by a single clamp-bar. Both receiver and sender can talk and they must check accurately to have both machines "in tune," and the clamp bars of each perfectly synchronized. When ready to transmit, a rubber cap is placed over the telephone mouthpiece to prevent any sound interfering with the transmission. As the picture roll revolves, the light cell travels slowly across from right to left.

While the portability feature is valuable for sensational spot news pictures, most of the transmission is done over long distance lines. Pictures go first to headquarters of the Acme organization, and are sent to subscriber papers only after telegraphic checking as to their news value.

By general agreement amongst the syndicates, 7x9 inches is maximum size and frequently several pictures are cropped and mounted together for a single transmission.

Wire transmission of pictures is not yet as perfect as the news services would like, but steady progress is being made both toward increased speed in handling and improved quality of reproductions. And the services and their technical experts are closely watching new ideas in motion picture, radio and television technique, that may be adapted to solve their own problems.

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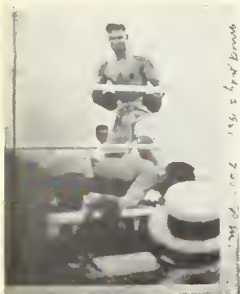
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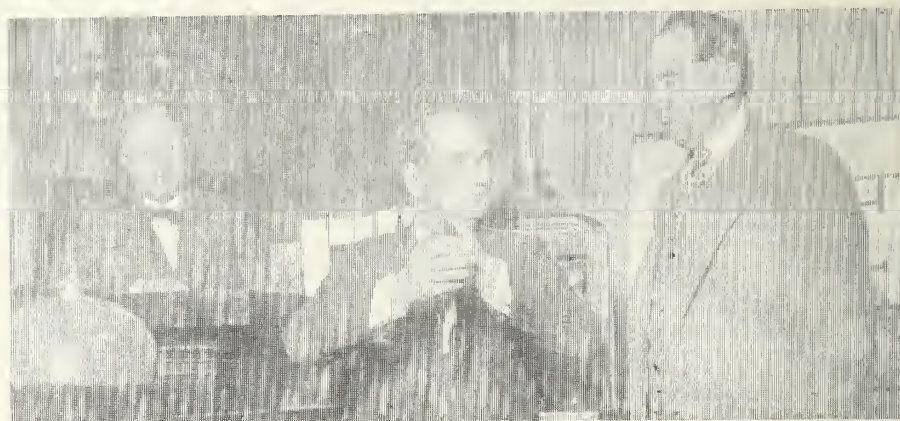
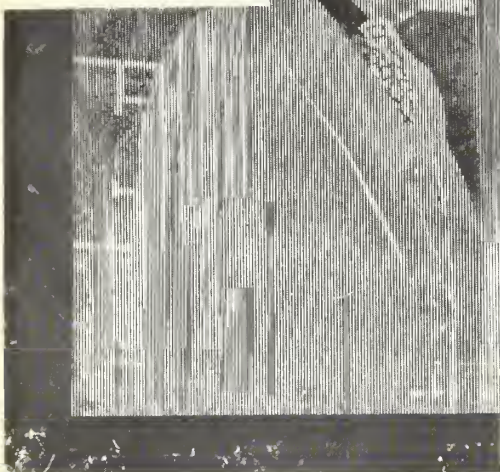
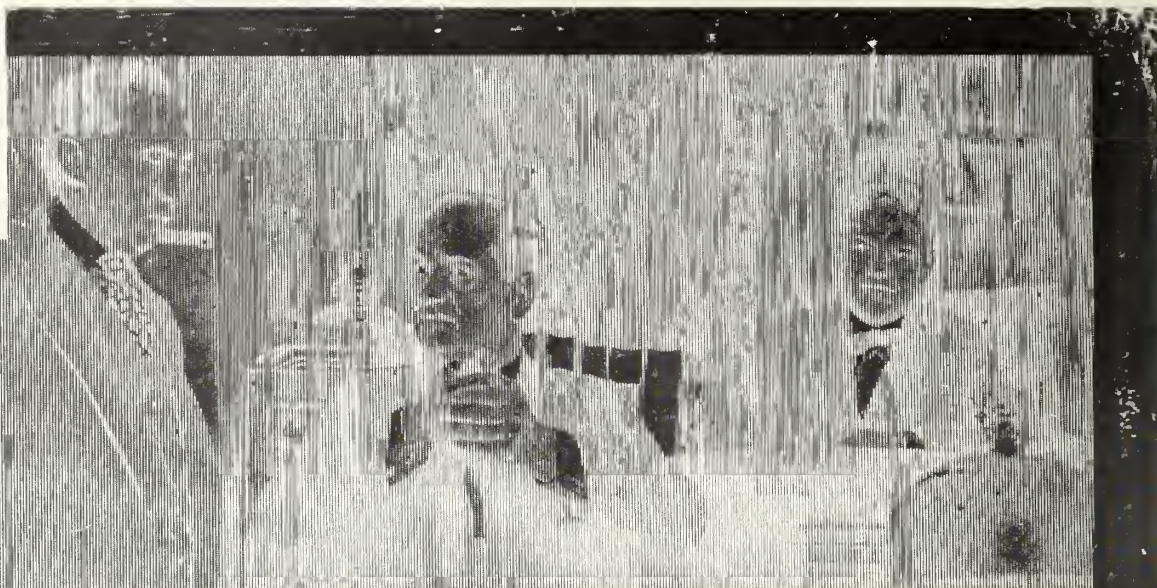
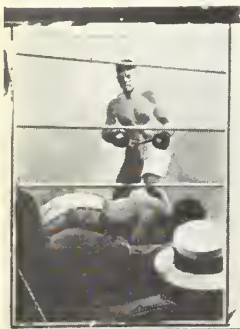
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First picture transmission system, a telegraphic code, developed by Ralph Tru blood, Los Angeles newspaperman, in early 20's, used a cleverly designed drawing board, which Tru blood is shown operating at right. Below is a sample of the code and at top left a sports news picture of Jack Dempsey scoring a knockont, with the reproduction obtained shown beneath.



the following code 2 is zero, 1 is one, 3 is two, 4 is three, 5 is four, 7 is five, 6 is six, 8 is seven, 9 is eight, 0 is nine. "Half down" means half-circle bow right, "half down" means half-circle bow down, "gentle up" means gentle curve bow up, etc. Curve right means curve bow right.



Center spread above is a specially obtained photographic copy of the copper plate of the first actual wired picture transmission ever sent eastward in regular service. The system was Pacific and Atlantic's Telepix. Above at left is the transmission room used for that process, and at right an illustration of how the same picture reproduced in newspaper and magazine engravings. The scene shows Jerry Geisler, well-known Los Angeles attorney, questioning Kid McCoy in Judge Charlie Crail's court. Bottom strip shows progress made in approximately ten years in a new flash picture. D. Roosevelt's car entering the White House in 1933, transmitted by the new system.

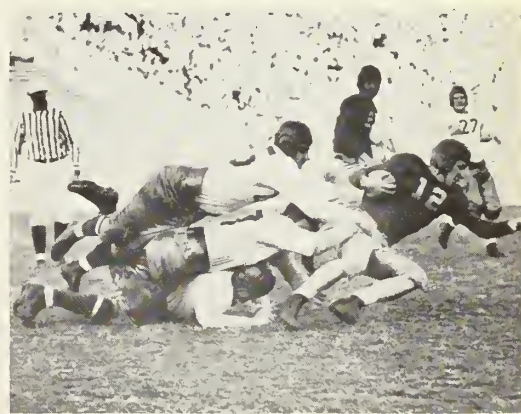
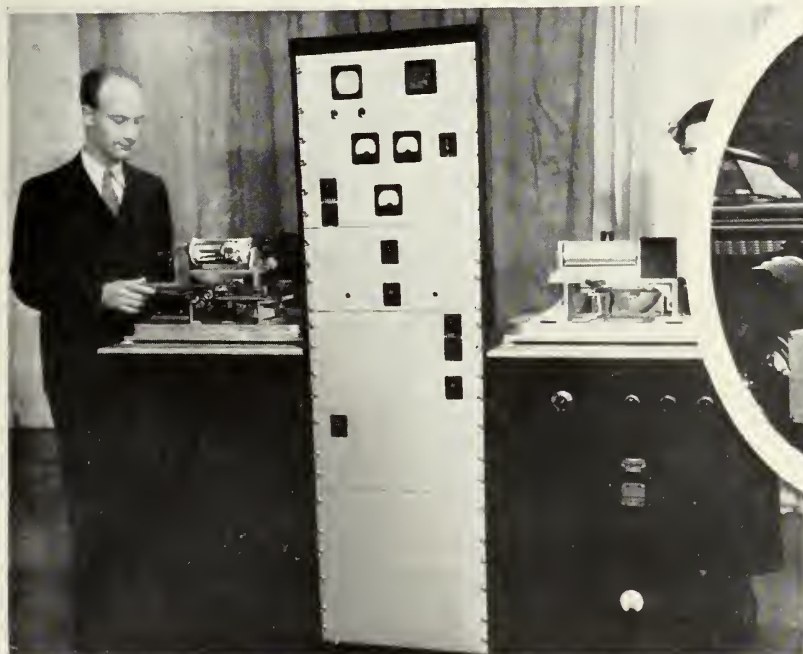


phone and Telegraph's system. At top right is the A. T. & T. sending machine and beneath the receiving apparatus. Each was cumbersome and required a very large room.



Above, two sidelights in fast news picture transmission. Left, a radio picture flash of Carnera and Baer weighing in for a bout; white streaks are static. Right, cabled picture of Pope Pius XI

(broadcasting world radio message in 1931) carried to New York by Bartlane process on a punched tape, shown at far right.



Above and in circle, George R. Watson, Acme's Los Angeles Bureau manager, shown with modern, portable Telefoto news picture transmitter, described in accompanying story, and top left, the receiving instrument. Strip down right shows studio

still of Virginia Weidler, as transmitted during testing of the new machine and Telefoto reproduction of a scene from the 1937 Ohio State-U. S. C. football game and how it compares with the original.

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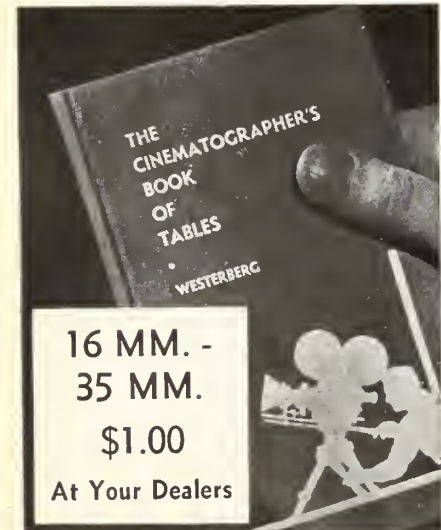
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Process

Roach's Mr. Young

Guiding spirit of studio's process department has devised many clever and valuable effects and printing machines.

Necessity may be the mother of invention, but so far as the process department of the Hal Roach Studios is concerned, Frank Young is the proud papa. With his expert knowledge of cameracraft, which to him is both a vocation and a hobby, and his familiarity with chemicals and mechanics as well, this mild-mannered and unassuming studio figure has long been the guiding spirit and the inspiration of this phase of production on the Roach lot. He has an uncanny knack of getting a sprocket from one machine, a cam from another and assembling something of rare value.

The department had its inception when the need of animated effects in the famous Roach two-reel silent comedies made the animation table essential. Young built it and it still is in use. He at that time was rounding out a career as production cameraman, begun about 1912, with more than 200 pictures to his credit.

In 1928, Roy Seawright, present head of the department, than an art student, took over the duties of punctuating silent action with animated words or effects. By 1933 the department had expanded to include making of wipes, laps and titles and Frank Young, who had been devoting the intervening years to private enterprise, returned to the studio to build an optical printer and stayed on to develop the efficient background projector now in use and to design and build whatever additional equipment the department needed.

About this time the studio undertook the making of "Babes in Toyland." The title of the Victor Herbert operetta classic naturally suggested the turning of the leaves of a book. It also seemed desirable to have the characters come to life as they were introduced. To accomplish this, a miniature projection background unit was built on a lathe bed and the screen animated to conform to the movement of the book pages. The arrangement worked so successfully that the title was made in six foreign languages. Recently this piece of equipment has been overhauled to include a number of new features.

One of the most useful devices in the department is a rebuilt duplex printer. This machine was originally made precision on one side for the speedy print-

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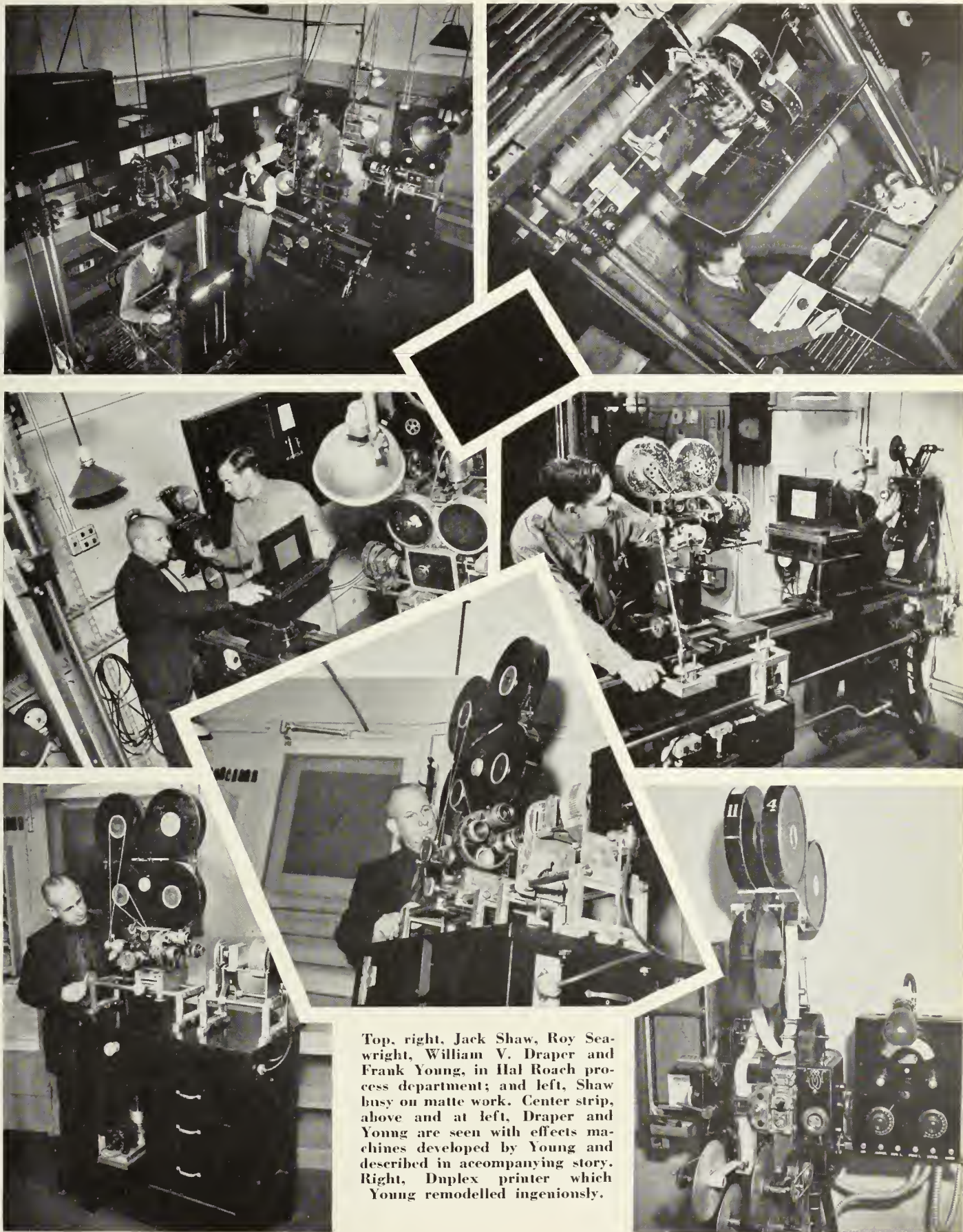
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ing of background plates, but the advent of the new slow duping pan and fine grain positive, which called for considerably more light, plus the problem of threading up in frame with panchromatic stock, brought about such a multiplicity of inventions, that when

the smoke had cleared away, what had once been a discarded duplex printer stood forth as one of the most usable printers in the business.

Mounted above the regular pay-out flanges are two one thousand foot Bell & Howell magazines, which accommo-

date four rolls of different types of stock. Coming down through a specially constructed light trap, any one of these stocks becomes immediately available for either side of the printer by simply looping from one pay-out sprocket to the opposite side and run-

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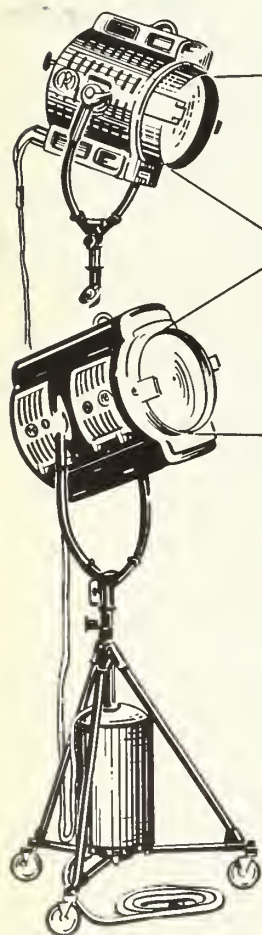
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ing the two sides in "sync." As the stock is in magazines, the threading may be done in white light. The original pay-out flanges are still available for additional stocks if necessary.

In addition to the original printing light set up, which operated from a light-change panel, Young also has devised an ingenious system for sliding a higher wattage light into position, capable of printing the slowest stocks. This light is controlled by a system of rheostats and neutral density filters. So flexible is the arrangement that any type of present day stock can be printed with but little special preparation or readjustments.

The newest piece of equipment to emerge from Mr. Young's workshop, is so new and different that no name has yet been chosen for it.

While working on "Topper" it was discovered that perhaps ninety per cent of the work normally done on an optical printer did not necessarily utilize the movement in the optical side. This suggested that such work as matting could be made more accessible if the cumbersome camera head was not reckoned with. The new piece of equipment is designed to meet this need. It has all the movements and characteristics of an optical printer, 'minus the intermittent,' and you might say, 'with the deck cleared for action.' Time alone will prove how useful the machine may be, but it is expected to catch about seventy-five per cent of the total work in the department.

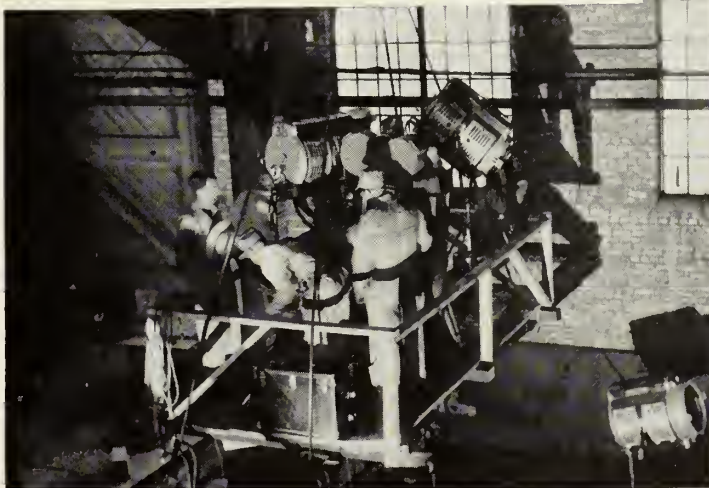
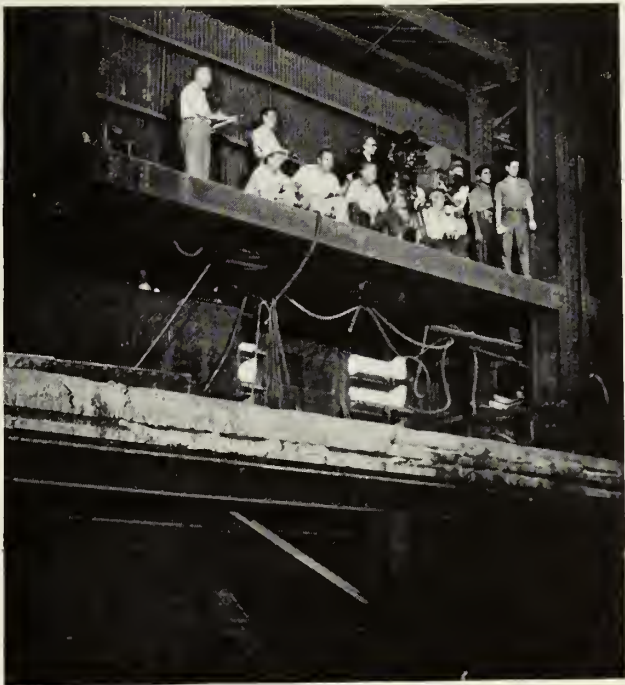
Other members of the Roach process department are William Vernon Draper, operator in charge of equipment, and Jack Shaw, special matte artist. Draper began his film career ten years ago as a cameraman on the Roach lot, but spent a few years in the interim in the effects departments with 20th Century-Fox and Columbia. He has been granted a patent covering a chemical background process and also is credited with the creation of "tailor-made wipes."

Lighting

Steel in Color

Charlie Boyle's notes on the high-lights of commercial film in which Technicolor proved worth under unusual conditions.

Technicolor's versatility was never better demonstrated than on our trip through the steel plants of the Middle West this fall to photograph the operation of its plants for U. S. Steel. Under production and lighting conditions that would make the toughest studio assign-



HIGHLIGHTS FROM JAUNT TO SHOOT "BIG STEEL" IN TECHNICOLOR. Top left, shooting exteriors at the Gary, Ind., blast furnaces. Top right, camera crew on job as molten steel is poured into moulds. Center left, waiting to get shots when the open hearth furnace is tapped. Center right, Charles P. Boyle, veteran member of Local 659, IATSE, and Technicolor cameraman on the picture, using the new type Technicolor Photometer. Lower left, "flying parallel" used for down shots on steel during rolling operations; many times during these scenes the flaming

hot steel caused the wood of the parallel to smoke. Lower right, the crew in action: Kneeling, left to right, Boyle and Al Cline, assistant cameraman; standing, Charles Underhill of the Batton, Barton, Durstine & Osborne advertising agency; Roland Reed, commercial film producer; Dave Smith, assistant cameraman; Lee Davis, operator; Fred Detmers, Technicolor technician. M. A. Anderson, who photographed steel scenes in black-and-white, is behind the camera. During much of the shooting close to the hot metal, the assistants wore asbestos suits.



COLOR SPEED SHOTS.

black-and-white print of an action shot of dancers Todd and Lee, photographed in color by Don Hooper, during series of experimental tests for Western Lithograph in co-operation with Selznick International. (Green and red of background came out black in reproduction shown here.) Used frequently by advertising photographers, this system, adapted to particular case, is rated best solution of getting action shots of stars in color to meet publication demands. Diagram at right shows placement of seven No. 20 Photoflash bulbs, set off in synchronization with the Leica shutter, using a Victor Flash synchronizer, together with an eight relay switch box. Type "A" Kodachrome was used, at f.16 and speed of 1/60. Trial and error methods were used in getting synchronization. Exposure tests using Photoflood bulbs for lighting were made an Eastman Panatomic, which is rated at Weston 10 in artificial light, and this was developed to a gamma of 1.0, which gives about the same density and contrast as Type "A." Hooper, member of Local 683, IATSE, now is associated with the Thomas S. Curtis Laboratories, in a technical capacity.

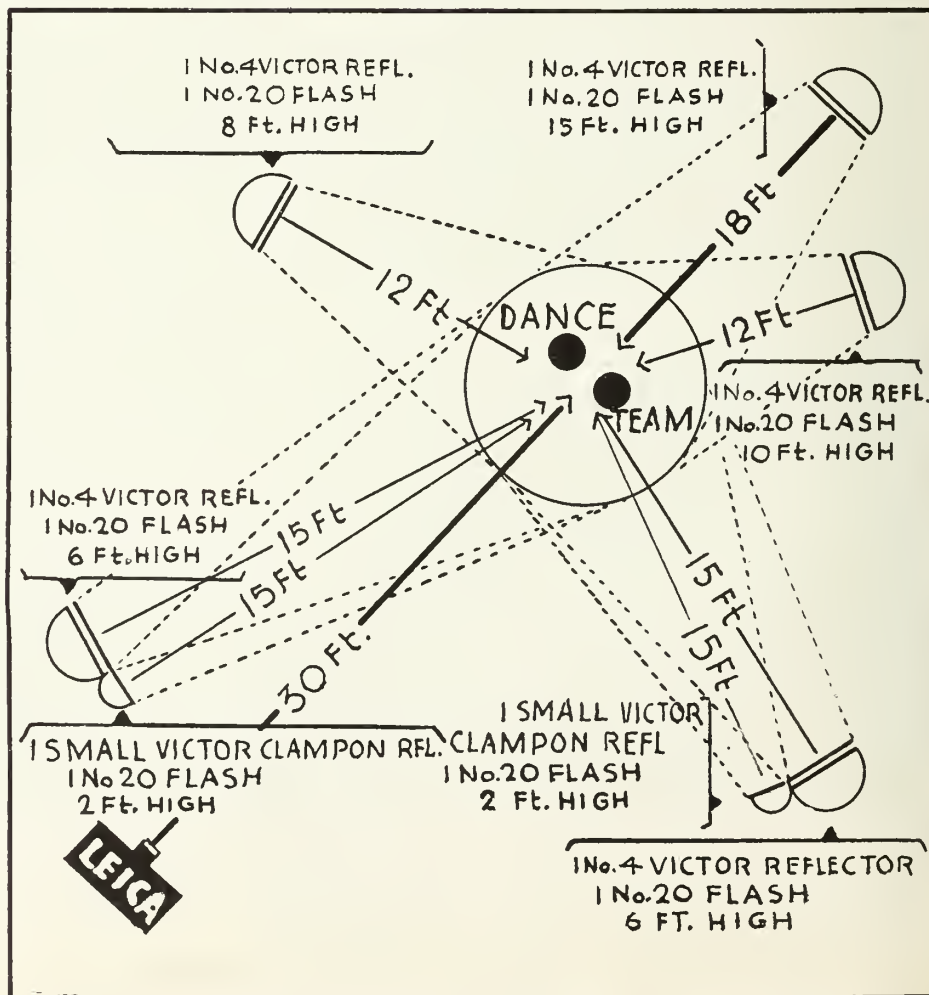
ment look like a lark, and with comparatively meager lighting equipment, the results obtained were so gratifying that executives of the big steel concern and its advertising agency, Batton, Barton, Durstine & Osborne, were unanimous in approval of Technicolor as an ideal medium for commercial productions.

The picture, along with a four-reel black-and-white treatment, was handled by Roland Reed Productions,

which headquarter at the Selznick-International lot, with Charles Underhill on hand, representing the advertising agency. A crew of 20 people left Hollywood on the several months jaunt, traveling in a private car.

First stop was at Hibbing, Minnesota, about 90 miles north of Duluth. The largest open pit iron mine in the world is located there and more material has been removed from this man-made chasm than was dug from the Panama Canal. Exteriors were photographed showing the iron ore being loaded on cars for shipment to the docks at Duluth. Scenes were made in one of the underground mines and our lighting equipment was unloaded and put in service for the first time.

This consisted of one of the new 1500 amp Mole-Richardson portable generators, ten 150 amp, four 90 amp, and two 65 amp M-R Hi-Intensity Arcs and six side arcs. As the capacity of the generator was only 1500 amps, we could only use the ten 150 amp spots on long shots but the smaller units came in handy in confined areas. At Gary, Indiana, we followed the ore from the ship into the large storage yards. Enough ore must be stored during the summer months to last through the winter as the lakes freeze solid and all shipping is halted. We spent about three weeks at Gary and followed opera-



tions at the blast furnaces, open hearth furnaces, rail mills, axle and wheel works and the tin plate mills.

The inside of a steel mill is about as black at the inside of a changing bag and where the light goes to is a problem. We got out all the large units and used them, so, that every one counted. Practically all the lighting was done from the floor and in many cases it was impossible to get side or back light on the action. Color was a great help here as any color we did shoot in such a setting became more vivid against the blacks. When possible, and if not too bright, we took advantage of any daylight that might come through open windows and doors. In many cases this gave a great deal of depth to our sets that we would not have been able to get with the lamps we had, and the blue in the sky or the color in the haze and smoke helped the scene.

The next stop was South Chicago where an electric furnace was photographed in operation. The heat of the metal in this furnace was around 3200 degrees Fahrenheit. The heat at the contact points of the carbons around 5000-6000 degrees. Just figure an exposure for that setup. We did and here it is. We used three 26% and one 10% transmission neutral filters and a stop of about F:3.5. Fred Detmers, Technicolor technician, with the use of his slide rule and my pencil, figured it out as about stop F:70, and that's some stop in anybody's steel mill.

To the eye very little detail was noticeable because it was so hot, but for the screen the different colors photographed well and in the picture the steel can be seen bubbling and boiling.

At the soaking pits where the ingots are reheated before rolling we set up for a shot and signaled for the operator to open the pit in order to get an exposure. The pit started to open and our clothes started to smoke. That pit was closely quickly. The camera was running a temperature so we called for the barricade and made the shot through the glass. The ingots were so hot at this point they were not distinguishable from the furnace and it was necessary to allow them to cool a little in order to get a good effect photographically.

Cleveland and Lorain, Ohio, came next and there they took a solid piece of iron and turned it into seamless tubing. Pittsburg, Homestead and McKeesport, Pennsylvania, were next. The Bessemer furnaces were the last on the list and the most spectacular. It was possible to photograph the slates from the reflected lights of the furnace about 100 feet away. After almost eight weeks we were told the final stop would be San Francisco, where we were to make a shot of the Bay Bridge which was made from U. S. Steel.

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Sound



Left: Figure 1—Single variable density. Right: Figure 2—Single variable density squeeze, showing transition from full-width-track to squeeze track.

New Track Standards

Academy Research Council adopts nomenclature for release sound and standard fader setting instructions, effective December 1.

Effective December 1, 1937, the Academy Research Council Standard Fader Setting Instructions became part of the Standard Release Print Leader, in conjunction with the adoption of a new Standard Nomenclature for Release Print Sound. Introduction of the new standard had been prepared at the fall convention of the Society of Motion Picture Engineers (Int. Photog., Nov., 1937) when John Hilliard, chairman of the ARC committee, which is working toward standardization of theatre projection sound characteristics, presented a detailed paper.

A special bulletin covering the procedure for

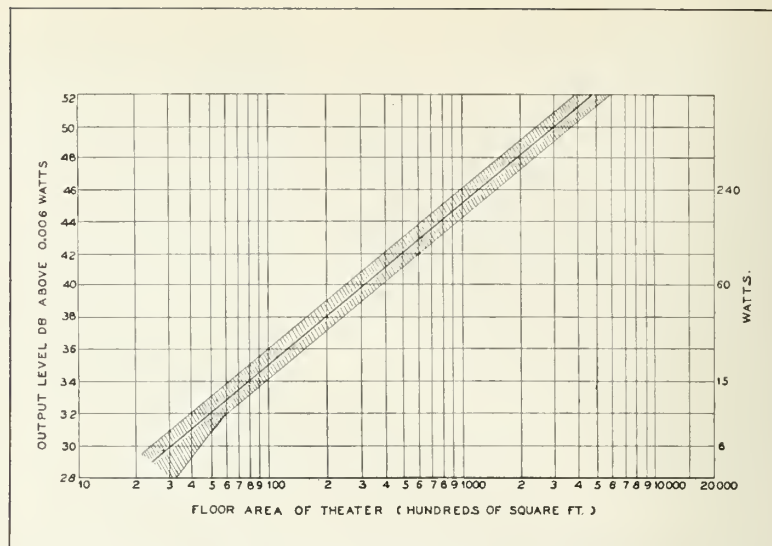


Figure 1A—Recommended amplifier output in electric watts in terms of the floor area of the theatre.



Left: Figure 3—Single variable density double squeeze, showing transition from full-width-track to double squeeze track. Right: Figure 4—Unilateral variable area.

Projecting "Hi-Range" Prints, the new standard nomenclature and fader setting instructions, was sent out late last month to exhibitors, theatre managers and projectionists. Highlights of the new setup are presented herewith, while any manager, projectionist or soundman, who has not received a copy of the bulletin, may obtain one by writing to the Research Council.

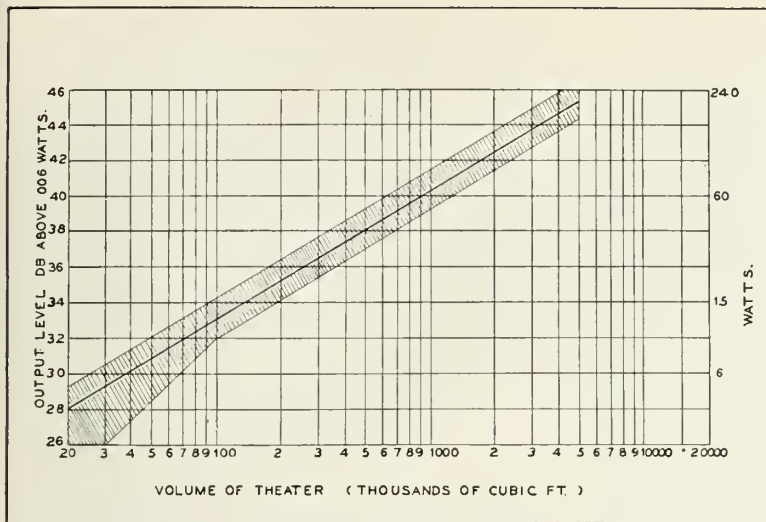


Figure 2A—Recommended amplifier output in electric watts in terms of the volume of the theatre.

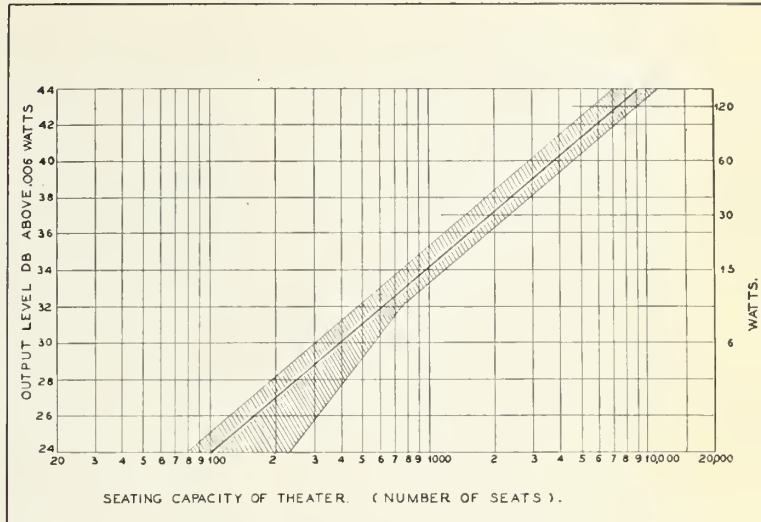
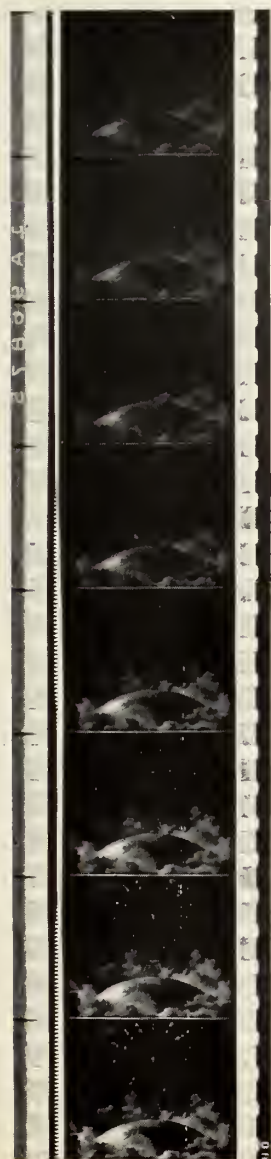


Figure 3A—Recommended amplifier output in electric watts in terms of the seating capacity of the theatre.

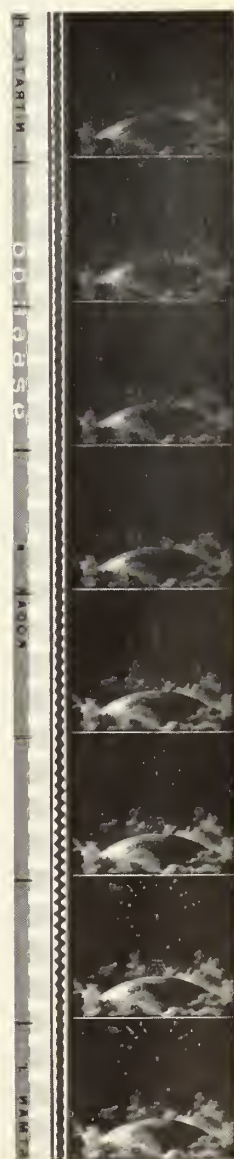
Below: Figure 5
—Bilateral variable area.



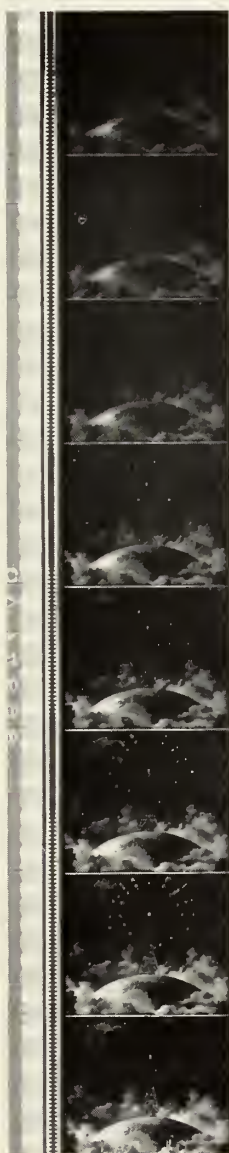
Below: Figure 7
—Push-pull variable density.



Below: Figure 9
—Push-pull variable area.



Above: Figure 6
—Duplex variable area.



Above: Figure 8
—Push-pull variable density squeeze, showing full-width-track double squeeze of 6 db. and double squeeze of 12 db.



Academy Research Council Standard Release Print Leader Showing Location of Standard Fader Setting Instructions

Protective Leader

Shall be either transparent or raw stock.

When the protective leader has been reduced to a length of six feet it is to be restored to a length of eight feet.

Identification Leader (Part Title)

Shall contain 24 frames in each of which is plainly printed in black letters on white background: (a) type of print, (b) reel number (Arabic numeral not less than $\frac{1}{4}$ of frame height), and (c) picture title.

Synchronizing Leader

Shall consist of 20 frames ahead of Start mark, then 12 feet, including Start mark, to picture, opaque except as specified below: In the center of the first frame there shall be printed across the picture and sound track area a white line $\frac{1}{32}$ inch wide upon which is superimposed a diamond $\frac{1}{8}$ inch high.

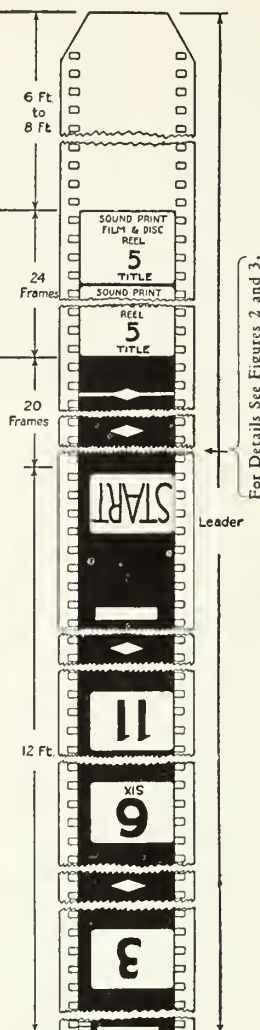
The next 15 frames may be used by the studio for sensitometric or other information. If not so used this leader shall be opaque.

The Start mark shall be the 21st frame, in which is printed START (inverted) in black letters on white background. The Academy camera aperture height of .631 inch shall be used in the photography of this frame, and all others between Start mark and beginning of picture.

From the Start mark to the picture the leader shall contain frame lines which do not cross sound track area.

In the frames in which the numerals "6" and "9" appear, the words "six" and "nine" (also inverted) shall be placed immediately below the figure, to eliminate the possibility of mis-reading in the projection room due to the similarity between the inverted numerals.

Beginning 3 feet from the first frame of picture, each foot is to be plainly marked by a transparent frame containing an inverted black numeral at least $\frac{1}{2}$ frame in height. Footage indicator numerals shall run consecutively from 3 to 11, inclusive. At a point exactly 20 frames ahead of the center of each footage numeral frame there shall be a diamond (white on black background) $\frac{1}{8}$ inch high by $\frac{3}{8}$ inch wide.



STANDARD NOMENCLATURE FOR RELEASE PRINT SOUND TRACKS: As a further step in the program of coordination between studio and theatre, the Research Council of the Academy of Motion Picture Arts and Sciences recently undertook to standardize the nomenclature for release print sound tracks, particularly as developments in sound recording equipment and technique have recently led to the appearance in the theatre field of a number of various new and different types of sound track.

The Standard Nomenclature for Release Print Sound Tracks follows, with examples of each type included in the illustrations on Pages 24 and 25.

Plays in "Std." Position of Sound Head Switch

	Fig.
Single variable density - - - - -	1
Single variable density squeeze - - - - -	2
Single variable density double squeeze - - - - -	3
Unilateral variable area - - - - -	4
Bilateral variable area - - - - -	5
Duplex variable area - - - - -	6

Plays in "P.P." Position of Sound Head Switch

	Fig.
Push-pull variable density - - - - -	7
Push-pull variable density squeeze - - - - -	8
Push-pull variable area - - - - -	9

Classification as to Type of Recording. Figures 1, 2, 3, 7 and 8 on the following pages, illustrates the different types of variable density sound tracks, while Figures 4, 5, 6, and 9 illustrate the various variable area tracks.

As may be seen from the illustrations, these two general types of sound track differ fundamentally in that variable density recordings, either "single" or "push-pull," consist of alternate dark and light striations extending across the width of the track and gradually merging one into the other, the sound being represented by these changes in density, while the variable area recordings consist of black and clear transparent sections lengthwise of the film, the sound being represented by the wavy dividing line between these two sections.

Classification According to Power Requirements Necessary for Undistorted Reproduction. Those tracks illustrated in Figures 1, 4, 5, 6, 7 and 9 may be reproduced on those systems having a volume range which was considered adequate up to the present time and previous to the installation of the modern improved equipment with its relatively greater amplifier power.

Classification of Type of Equipment Necessary for Reproduction. "Push-pull" tracks as illustrated in Figures 7, 8 and 9, can be reproduced only on systems having a double or "push-pull" photocell, together with the necessary associated circuits.

Figure 8 illustrates the different amount of "squeeze," or track reduction, now being applied to variable density recordings. The upper portion of this figure shows a "push-pull" track before the application of any "squeeze," the center portion a reduction in track width of one-half, and the lower section a reduction of three-fourths, these being reductions of 6 and 12 db respectively.

"PROCEDURE FOR PROJECTING HI-RANGE PRINTS: The Research Council desires by means of the work of this Committee, to give to exhibitors throughout the country a more intimate knowledge of efforts of the producers toward obtaining natural sound quality.

"Since the advent of recorded sound to motion pictures there has been a continual improvement in the quality of sound recording



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and sound reproduction by extending the volume range to produce greater dramatic effect.

"Improvements in recording naturally require improvements in reproduction. Improvements in amplifiers permit a wider volume range, and the theatre reproducing apparatus must consequently be capable of transmitting this increased range to the theatre patrons.

"Some of the recent developments in reproducing equipment include: introduction of new design horns which give far better quality than was formerly possible, and more even and adequate distribution of sound throughout the theatre auditorium; improvements in the film running mechanism which have reduced flutter to a minimum; and increased amplifier power, which will adequately reproduce without distortion the wider power ranges now being recorded on the film.

"It is recognized in the studios that until such time as all theatres are fitted with modern equipment, methods must be adopted which allow the wider volume range films to be reproduced to their best advantage in those theatres having equipment capable of this reproduction but which do not penalize those theatres fitted with reproducing equipment not capable of handling the wider volume range.

"The film which you receive in your theatre has an output limited by the dimensions of the track. The maximum volume range, i.e., the range from the faintest to the loudest sound which can be satisfactorily reproduced, is limited by the volume range between surface noise and the total track sound output.

"During the past year several major companies have, in a limited number of releases, made available to theatres two general types of prints: one being the 'Regular' release print with ordinary volume range, and the other divided into two classifications according to the volume range recorded on the film, known as 'Hi-Range' and 'Lo-Range' prints.

"'Hi-Range' prints, requiring increased amplifier power in the reproducing equipment, and having an approximate sound intensity range of 50 db, produce intensity changes which closely approximate those occurring in nature. Musical passages so recorded and subsequently reproduced with adequate power, lend added color and naturalness necessary to insure more complete enjoyment of the presentation.

"Productions released on 'Hi-Range' prints will also be available on 'Lo-Range' prints, the volume of which may correspond with the studio 'Regular' prints, or may be recorded to play 3 or 4 db above the particular studio's average. (See illustrations on Page 28.) In other words, any production issued on 'Regular' prints will be distributed completely on one type of print, while any production available on 'Hi-Range' prints will also necessarily be available on 'Lo-Range' prints as well.

"As more and more theatres are converted to modern equipment capable of reproducing wider volume ranges, the practice of issuing 'Hi-Range' and 'Lo-Range' prints will undoubtedly be rapidly extended.

"Success of such productions as "Maytime," "100 Men and a Girl," and other similar musical productions released on 'Hi-Range' indicates that this type of release print has a definite place in the industry from a showmanship standpoint. A complete appreciation by the exhibitor of the technique required for their reproduction will insure still greater box office success.

"By means of improved technique in the studio, 'Hi-Range' prints have a controlled balance of volume between dialogue and music; that is, relative reproduction between the dialogue and music has been pre-determined by experienced showmen after careful consideration of the output level.

"The sound volume reaching the ear of a patron from any given print projected at a certain fader setting depends upon the per-



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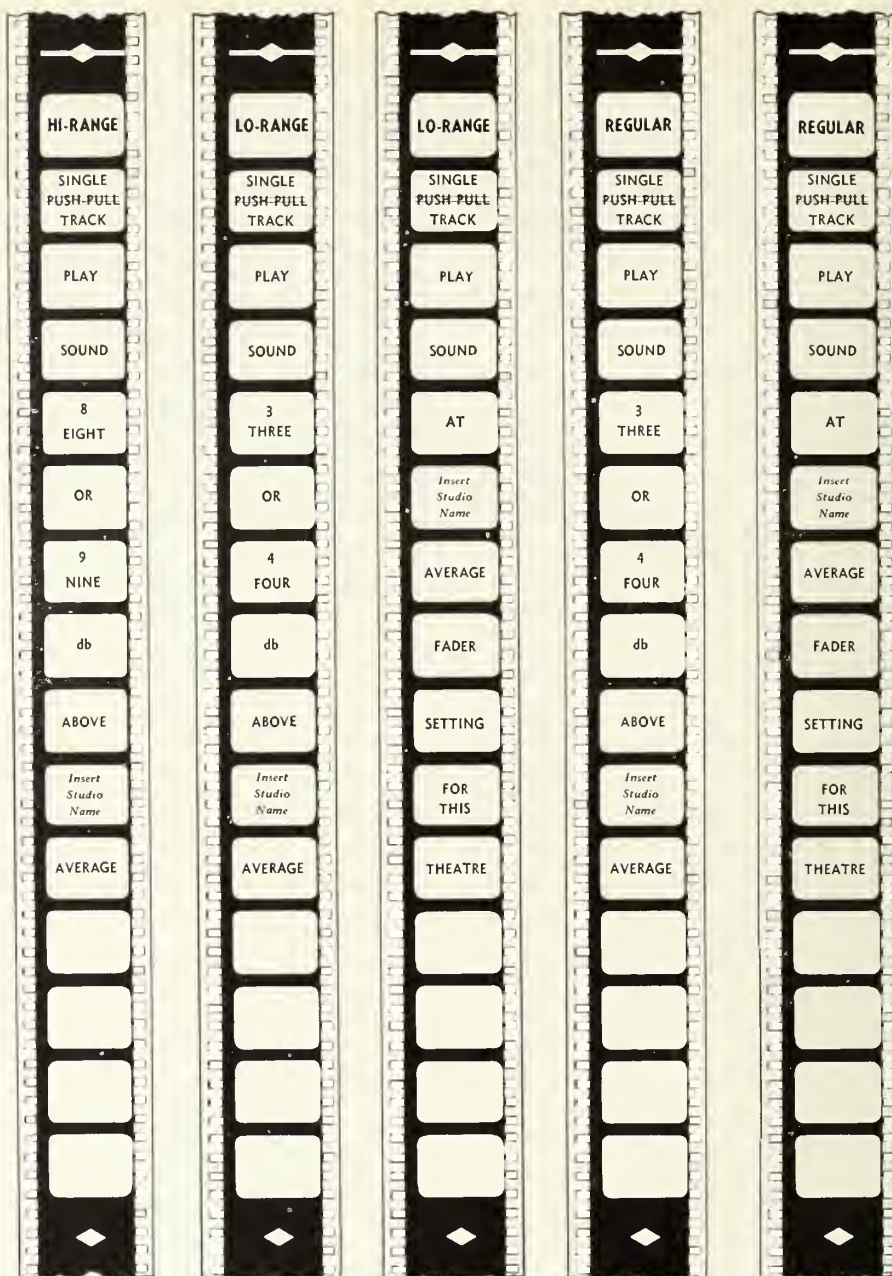
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centage modulation of the signal on the film. On 'Regular' prints (projected at the average fader setting for any particular studio's product), both the dialogue and music are given 100% modulation a greater part of the time. This means that the output volume will be practically the same throughout the production.

"In recording 'Hi-Range' prints, however, most dialogue passages are intentionally reduced in modulation so that average dialogue modulation rarely exceeds 50%, while music is recorded at 100% modulation. This provides a volume differential between music and dialogue of at least 6 db. 'Hi-Range' prints do not necessarily provide louder sound, but an extended volume range which gives more dramatic value in the theatre.

"When such a print is projected, the fader must be raised at least 6db for proper dialogue volume. (See Page XX.) To utilize this volume range on the film the theatre must necessarily be provided with an amplifier output which is increased by approximately the same range. Increased amplifier power is necessary since in the past the average theatre installation has had only sufficient power to reproduce dialogue satisfactorily.

"In general, those theatre installations equipped with modern loud speaker systems have sufficient amplifier power to adequately reproduce this higher volume range.

"By observation of a number of houses it has been found that a theatre containing up to 1000 seats requires from 10 to 15 watts of power, from either original old standard horn systems or more modern two-way loud speaker systems. Houses having from 1000 to 2000 seats require from 19 to 24 watts of power, and theatres with over 2000 seats require at least 48 watts.

"These general classifications will serve to determine the amount of power necessary for theatres with seating capacities as outlined above. However, in order to demonstrate the basis upon which these rules were formulated, the Committee has included in this report the charts on Pages 24 and 25. These charts indicate the theoretical minimum requirements for a theatre of any given size or seating capacity, while the information in the paragraph above is based upon combinations of amplifier equipment actually available commercially at the present time.

"Figure 1A shows recommended amplifier

power output in terms of theatre floor area;

"Figure 2A in terms of the cubical contents of the theatre;

"Figure 3A in terms of the number of seats installed.

"If equipment is not functioning properly, or if there is insufficient power capacity, higher volume portions of musical passages will reproduce with harshness and distortion.

"When such prints are reproduced on older type theatre systems, increase in amplification necessary to properly reproduce the high volume passages will sometimes introduce objectionable hum and other system noises which can usually be eliminated by careful adjustment or modification of the system.

"Use of higher amplifier power necessary to reproduce these prints also requires that distribution of sound throughout the theatre be particularly uniform. In this type reproduction, flutter due to poor motion of film through the sound head, if present, will be particularly noticeable.

"In order to assist exhibitors, theatre managers, and projectionists as well as the exchanges, in quickly identifying the 'Hi-Range' and 'Lo-Range,' as well as 'Regular' prints, each of the major studios will, commencing immediately, label each print 'Hi-Range' or 'Lo-Range' or 'Regular,' and designate a general average fader setting at which the print should be projected—this information to be included in the Standard Release Print Leader on each reel of each production, in accordance with specifications outlined in an accompanying illustrated statement of this Bulletin. *It is suggested that all theatre projectionists carefully watch every print in order to take advantage of this additional information which should assist in increasing the showmanship value of recorded sound.*"

COMMITTEE ON STANDARDIZATION OF THEATRE SOUND PROJECTION EQUIPMENT CHARACTERISTICS.

The Research Council Bulletin also contained detailed specifications of the Standard Fader Setting Instruction Leader, illustrated on Page 26 with details of the information to be known as "Standard Fader Setting Instructions" in illustrations on Page 28. Text of the specifications follows:

"The Standard Fader Setting Instruction Leader shall consist of 15 frames located as specified (Academy Research Council Standard Release Print Leader) in the synchronizing leader; the first frame shall designate the type of print; the second frame the type of reproducing equipment necessary to project the print; and the next nine frames the general fader setting specified in relation to an average fader setting for the particular product under consideration. The remaining frames may be used for whatever additional information the studio may wish to transmit to the theatre.

"This instruction leader will be of assistance to the exchange in that it will facilitate special handling required in the exchange for the various types of prints, by providing an easily noted means of identification for each type.

"It should be noted that the designation 'Regular' in the Instruction Leader indicates that only one type print has been issued on the particular production under consideration. Productions with prints designated as either 'Hi-Range' or 'Lo-Range' will have been issued in both type prints, i.e., all productions on 'Hi-Range' prints will have necessarily been issued on 'Lo-Range' prints as well.

"This instruction leader will also enable the projectionist to identify a print which requires a 'push-pull' reproducing system as contrasted to a print requiring a 'single' system.

"In order to identify more plainly the 'push-pull' or 'single' system prints, it was decided to include both the terms 'push-pull' and 'single' on every leader, crossing out in the

laboratory one or the other of these two to leave the appropriate term designating the type sound track on the print. Illustration of the Standard Fader Setting Instruction Leader (shown herewith) indicates the manner by which this was accomplished for leaders which would be included in prints containing a sound track for reproduction on a 'single' system. For leaders to be included in prints containing 'push-pull' tracks the word 'single' would have been crossed out, leaving the word 'push-pull' to indicate this type of track.

"In order that the exhibitor may achieve the best results, the fader setting designated in this leader should be followed in general, inasmuch as the entire balance between the dialogue and music throughout the reel will be chosen for each designated setting."

Patents

Last month the following patents of interest to readers of International Photographer were issued by the U. S. Patent Office. These selections and brief descriptions of new patents were prepared by Robert W. Fulwider, well-known Los Angeles attorney, specializing in patent and trade mark counsel.

No. 2,096,001—SOUND RECORDING. *Burton F. Miller*, Hollywood, Calif., assignor to United Research Corporation, Long Island City, N. Y., a corporation of Delaware. Application July 5, 1935, Serial No. 29,930. 8 Claims. (Cl. 179-100.3)

Apparatus for recording sound on film in which the means for varying the amount of light transmitted to the film includes an aperture and a pair of movable elements suspended in a magnetic field adapted for movement with respect to each other.

No. 2,096,015—APPARATUS FOR THE DEVELOPMENT OF LIGHT SENSITIVE MATERIAL. *Frederick W. von Meister*, New York, and *Frederick W. Andrew*, Glen Head, N. Y., assignors to Ozalid Corporation, New York, N. Y., a corporation of Delaware. Application March 9, 1935, Serial No. 10,208. 4 Claims. (Cl. 95-94)

An apparatus for developing films with ammonia.

No. 2,096,082—NOISELESS RECORDING. *William E. Beatty*, Hollywood, Calif., assignor to United Research Corporation, Long Island City, N. Y., a corporation of Delaware. Application October 30, 1934, Serial No. 750,628. 9 Claims. (Cl. 179-100.3)

Apparatus for recording sound on film which includes means for controlling the exposure of the film located between the film and the light modulating means and responsive to the modulated light.

No. 2,096,149—SOUND RECORDING DEVICE. *Manfred von Ardenne*, Berlin-Lichterfelde-Ost, Germany, assignor to Radio Patents Corporation, New York, N. Y., a corporation of New York. Application July 6, 1935, Serial No. 30,204. In Germany March 12, 1935. 9 Claims. (Cl. 179-100.3)

Apparatus for recording sound on film which includes a fluorescent screen, means to produce a luminous line thereon, and means for projecting an image of said line on to the film.

No. 2,096,231—HORIZONTAL TYPE FILM DEVELOPING AND DRYING MACHINE. *Harris N. Ensign*, Los Angeles, and *Harry A. Hanson*, West Los Angeles, Calif., assignors to Paramount Productions, Inc., Los Angeles, Calif., a corporation of Delaware. Substituted for abandoned application, Serial No. 10,840, March 13, 1935. This application May 9,

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1936, Serial No. 78,884. 14 Claims. (Cl. 271-2.3)

A motion picture film developing machine in which the film is driven in a generally horizontal direction by means of a series of drums and rollers in each tank.

No. 2,096,232—FILM DRYING MACHINE. *Harris N. Ensign*, Los Angeles, and *Harry A. Hanson*, West Los Angeles, Calif., assignors to Paramount Productions, Inc., Los Angeles, Calif., a corporation of Delaware. Application March 13, 1935, Serial No. 10,841. Renewed May 3, 1937. 2 Claims. (Cl. 34-48)

A film drier in which the film is fed horizontally against the air current by a series of rollers.

No. 2,096,811—SOUND RECORDING APPARATUS. *Edward W. Kellogg*, Moorestown, N. J., assignor to Radio Corp. of America, a corporation of Delaware. Application Jan. 5, 1935, Serial No. 531. 3 Claims. (Cl. 179-100.3)

Apparatus for re-recording variable area sound track without ground noise which includes a pair of light sources and photo-cells for re-producing sound from the film being re-recorded.

No. 2,096,815—CAMERA. *Ludwig Leitz*, Wetzlar, Germany, assignor to Ernst Leitz, G. m. b. H., Wetzlar, Germany. Application Oct. 24, 1935, Serial No. 46,503. In Germany Oct. 24, 1934. 2 Claims. (Cl. 95-44)

A camera having a range finder and optical means for joining the light rays admitted to the camera through the finder and a second opening.

No. 2,097,059—RINSE TUBE FOR MOTION PICTURE DEVELOPING MACHINES. *Harris N. Ensign*, Los Angeles, and *Harry A. Hanson*, West Los Angeles, Calif., assignors to Paramount Productions, Inc., Los Angeles, Calif., a corporation of Delaware. Application May 9, 1936, Serial No. 78,883. 3 Claims. (Cl. 95-94)

A part of a horizontal developing machine having a downwardly sloping trough and air squeegees at each end.

No. 2,097,141—PHOTOPHONOGRAPHIC APPARATUS. *Arthur C. Blaney*, Erlton, N. J., assignor to Radio Corporation of America, New York, N. Y., a corporation of Delaware. Application March 9, 1933. Serial No. 660,106. 2 Claims. (Cl. 179-100.3)

A sound on film recording apparatus which includes a light filter of varying density in the beam path for producing a uniform exposure of all portions of the film.

No. 2,097,220—MECHANICAL SELF-STOPPING DEVICE FOR PICTURES WITH AN AUTOMATIC RE-STARTER. *Raymond Blum*, Paris, France. Application July 20, 1936, Serial No. 91,626. In France July 25, 1935. 3 Claims. (Cl. 88-18.4)

A motion picture projector which is self-stopping and has an automatic re-starter.

No. 2,097,657—PHOTOGRAPHIC RECORDING OF SOUND. *Glenn L. Dimmick*, Audubon, N. J., assignor to Radio Corp. of America, a corporation of Delaware. Application July 23, 1935, Serial No. 32,734. 8 Claims. (Cl. 179-100.3)

Sound recording apparatus which includes a light slit and means for producing at said slit a light image triangularly shaped and extended as its vertex to insure continuous illumination of said slit.

No. 2,097,668—PHOTOGRAPHIC RECORDING OF SOUND. *Edward W. Kellogg*, Moorestown, N. J., assignor to Radio Corp. of America, a corporation of Delaware. Application Sept. 14, 1935, Serial No. 40,557. 16 Claims. (Cl. 179-100.3)

A method of producing a variable area sound track which includes conforming a light beam to a shape adapted to prevent fogging of the narrow unexposed areas thereof.

No. 2,097,706—METHOD OF AND APPARATUS FOR MULTICOLOR PHOTOGRAPHY. *Richard Thomas*, Los Angeles, Calif. Application Jan. 21, 1935, Serial No. 2,807. 7 Claims. (Cl. 88-16.4)

A camera having four lenses optically related to four adjacent image areas, and a rotatable holder carrying three color filters and means to restrain light from lens.

No. 2,097,745—APPARATUS FOR MAKING MOVING PICTURES IN DEPTH. *Harry Smith*, Los Angeles, Calif., assignor to one-third to

The LABORATORY BOOK of TABLES

By D. K. Allison

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ANALYSIS OF URANIUM TONE					
Precipitate four 50.0 ml. samples with 10 ml. 15 N NH ₄ OH. Wash ppt. three times with 15 ml. portions of 10% (vol.) NH ₄ OH; unite filtrate and washings. Treat two samples according to Procedure 1, two according to Procedure 2.				Treat two 100 ml. samples according to the C & R glass electrode technic. Report as pH. (Alternatively, determine pH colorimetrically using Thymol Blue. Photoelectric Colorimeter recommended.)	
Procedure 1		Procedure 2		Note: Chloride concentration may be determined as directed under Analysis of Blue Tone.	
Ppt.	Filtrate	Ppt.	Filtrate		
Ignite 15 min. @ 800°C in a weighed crucible. Cool in desiccator. Weigh. gms. U ₃ O ₈ x 35.77 = gms. uranyl nitrate/liter.	Make just acid with 6 N H ₂ SO ₄ ; add 5 ml. soln. B, and 10 drops soln. C. Titrate with N/40 Na ₂ S ₂ O ₃ volume Na ₂ S ₂ O ₃ x 0.1645 = gms. K ₃ Fe(CN) ₆ per liter.	Reject	Add 20 ml. Soln. A Filter			Reject
			Precipitate	Filtrate	
			Dissolve in 100 ml. Soln. H; add 5 ml. H ₂ SO ₄ . Heat to boiling titrate with N/10 KMnO ₄ , to first pink flush. volume KMnO ₄ x 0.1842 = gms. pot. oxal./L.		
DIRECTIONS FOR THE PREPARATION OF SPECIAL SOLUTIONS AND REAGENTS FOR THE ANALYSIS OF URANIUM TONE					
Solution A	36 gms. Ca(NO ₃)/liter	Solution G	6 gms. soluble starch, triturated cold, made to one liter with boiling water, 10 gms. ZnSO ₄ added.		
Solution B	130 gms. KI 70 gms. Zn SO ₄ /liter	Solution H	8N HNO ₃		
Solution C	40 gms. KMnO ₄ 60 ml. H ₂ SO ₄ /liter	N/40 Na ₂ S ₂ O ₃	6.205 gms. NA ₂ S ₂ O ₃ /liter		
Solution D	100 gms. KI/liter	N/10 KMnO ₄	3.161 gms. KMnO ₄ /liter		

John H. McCoy, and four per cent to Carmine Morrell, both of Los Angeles, Calif. Application Feb. 25, 1936, Serial No. 65,729. 13 Claims. (Cl. 88-16.6)

A stereoscopic camera which includes a base and a pivotally mounted holder structure carrying a lens carrier and means for oscillating the holder structure simultaneously with the reciprocation of said lens carrier.

No. 2,097,758—REPRODUCTION OF SOUND.

Glenn Dimmick, Haddonfield, N. J., assignor to Radio Corp. of America, a corporation of Delaware. Application Jan. 19, 1935. Serial No. 2,460. 5 Claims. (Cl. 179-100.3)

Reproducing apparatus which utilizes a photocell with a plurality of cathodes and directs separate portions of the light beam to the separate cathodes.

No. 2,097,767—PROJECTOR LAMP. John E.

McAuley and Guy R. Trevillian, Chicago, Ill., assignors to J. E. McAuley Mfg. Co., Chicago, Ill., a corporation of Delaware. Application Sept. 21, 1935, Serial No. 41,551. 19 Claims. (Cl. 176-51)

A lamp which has a pair of movable shields for protecting the mirror during striking of the arc.

No. 2,097,995—RECORDING AND REPRODUCING

OF SOUND. Charles M. Burrill, Haddonfield, N. J., assignor to Radio Corp. of America, a corporation of Delaware. Application May 28, 1936, Serial No. 82,374. 22 Claims. (Cl. 179-100.3)

A sound record producing method which includes recording the sound on a plurality of tracks at different levels, segregating the high level but not overshoot sections of said tracks, and combining said sections into one recording.

No. 2,098,086—PHOTOGRAPHIC DESENSITIZER.

Walter Dieterle, Dessau-Ziebigk, Germany, assignor to Agfa Anso Corp., Binghamton, N. Y., a corporation of New York. No drawing. Application July 16, 1936, Serial No. 90,891. In Germany July 25, 1935. 4 Claims. (Cl. 95-88)

A photographic desensitizing solution which comprises an aqueous solution of a water-soluble compound selected from the group consisting of an anthraquinone and phenanthrenequinone, and at least 2 per cent of sodium sulfite.

ROBERT W. FULWIDER.

on both sides of the fence, hence assumes no role other than of reporting developments. Mr. Richardson's views are interesting, but what strikes us as most significant, is the apathetic attitude of executives and workers in both studios and theaters on an issue which the sponsors of both viewpoints, contend to be highly important to efficient work and good shows in theaters. In first covering this situation as news, International Photographer gave both factions a chance to tell their story. It argued for neither case. Its pages still are open for any intelligent comment or debate on the subject.—Ed.

Ed Gibbons,
International Photographer.

Dear Mr. Gibbons:

I am sure the International Photographer has neither the desire or intention to be unfair. I have just read your editorial "What Do You Think?" on page 28 in your November issue.

I may say I was one—if not the first—to raise objection to the proposed change in apertures. The chief objections to it were not even mentioned in the above named article. Surely Hollywood does not wish to establish a set-up that would make it impossible—yes, exactly that, impossible—to place its productions upon theatre screens in perfect form, both visually and acoustically, yet that is precisely what this new aperture proposes.

First, I have not the necessary data before me at this writing, but as I recollect it the proposal would allow only a framing tolerance of 0.0006 each way. In other words assuming the projector framing carriage to be exactly central, a movement exceeding 0.006 of an inch in either direction would result in the frame line either above or below showing upon the screen. That may not be the precise figure, but in any event the tolerance was quite too close for use in practical work, especially in those thousands of one-man projection rooms now in use, in which the projectionist must perforce be away from the projector a substantial part of the time. That is one VERY practical objection to the new proposed standard.

Secondly, complaints reach my desk very frequently of productions in which the sound

track is misplaced enough to contact either the sprocket holes or the picture frame line. If you can obtain copies of the illustrations accompanying a paper by projectionist Irl Gordon, Akron, Ohio, presented before the SMPE fall meeting you will have pronounced visual proof of this condition, complaints of which and its evil effect reach me constantly from all over the country and Canada.

Now—as you doubtless are well aware—the new standard proposes a reduction of space between sprocket holes and visual image. May I ask, if producers are unable to keep the sound track out of either the picture area or sprocket hole area, *how is it going to be done when the available space is still further reduced?*

As I see it, the real trouble has its seat in the fact that the Research Council totally ignored the Projection Practice Committee of the Society of Motion Picture Engineers in this matter. We had two members who were supposed to be consulted. Neither was. The very first news we had of the proposed change was when the Committee was apprised of it by copy sent to the trade papers for publication, one to myself for example. Had the Committee been apprised of the proposed action it immediately would have declared the change to be impractical of application.

Please clearly understand that in this I am *not* speaking for or by authority of the Projection Practice Committee. However, I do say that the Committee, which I have the privilege of belonging to, is the organized body representing projection matters through the Society of Motion Picture Engineers and should be consulted by the Research Council or any one else before any basic matter pertaining to projection is put forward for consideration or adoption.

All this is in good humor, friend Gibbons, though I don't mind saying I was a bit peeved when I saw how the Projection Practice Committee, and through it the Society of Motion Picture Engineers, had been totally ignored in this matter and its Chairman, whose name was published by the Research Council as one who aided in the formation of the proposed new standard, had not even been advised that the action was in contemplation.

Trusting what I have said will be of some value, I am,

Cordially yours,

F. H. RICHARDSON.

Projection

Richardson

Veteran trade commentator on projection affairs gives SMPE views on standard aperture change fight.

The following communication from F. H. Richardson, veteran writer on projection affairs for the Quigley publications, is the only pertinent comment received during recent weeks by International Photographer on the SMPE-Academy Research Council controversy over revision of the Standard Aperture. In presenting the highlights of this situation in our November issue under the heading, "What Do You Think?" we sought to present the views of both sides impartially. Any failure to do so was a crime of journalistic incompetence, rather than of bad intent. International Photographer has readers

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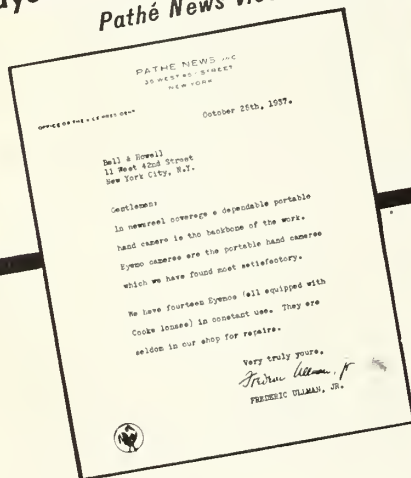
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